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FIRST BIENNIAL REPORT

OF THE

Commissioner of Horticulture

OF THE

STATE OF CALIFORNIA

FOR 1903-1904.

ELLWOOD COOPER, Commissioner,

LIBRARY OF THE UNIVERSITY

SACRAMENTO:
W. W. SHANNON, : : : : SUPERINTENDENT STATE PRINTING.
1905.

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CALIFORNIA STATE COMMISSION OF HORTICULTURE.

ELLWOOD COOPER	Commissioner	Santa Barbara.
ED. M. EHRHORN	Deputy	Mountain View.
JOHN ISAAC	Clerk	San Francisco.
E. K. CARNES	Assistant Deputy	Riverside.
GERTRUDE BIRD	Stenographer	Sacramento.

OFFICE:

ROOM 41, STATE CAPITOL, SACRAMENTO.

BRANCH OFFICE, ROOM 11, FERRY BUILDING, SAN FRANCISCO.

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1903-04

Office State Commissioner of Horticulture,
State Capitol,
Sacramento, Cal., December 31, 1904.

To His Excellency, George C. Pardee, *Governor, and the Honorable the Senate and Assembly of California:*

I have the honor to submit herewith the first biennial report of my office, showing the operations of the Commission of Horticulture for the years 1903 and 1904.

Respectfully submitted.

ELLWOOD COOPER,
Commissioner.

Attest:
JOHN ISAAC, Clerk.

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REPORT OF THE COMMISSIONER OF HORTICULTURE.

INTRODUCTION.

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By an Act of the Legislature approved March 25, 1903, the State Board of Horticulture, which was first organized on March 4, 1881, as a branch of the State Viticultural Commission, went out of existence, and a new horticultural law, providing for a single commissioner, was passed.

Under Act of the Legislature, approved March 4, 1881, the powers of the Board of State Viticultural Commissioners were enlarged in their scope to take in horticultural matters in addition to those bearing upon viticulture. In accordance with this, the first meeting of the Board of State Horticultural Commissioners was held in San Francisco on April 5, 1881. The appointment of this board was made to better facilitate the carrying out of Section 8 of "An Act to define and enlarge the duties and powers of the Board of State Viticultural Commissioners," etc., approved March 4, 1881, which section reads as follows:

> SEC. 8. The Board of State Viticultural Commissioners shall also appoint an officer, who shall be especially qualified by practical experience in horticulture for the duties of his office, to perform similar duties respecting the protection of fruit and fruit trees, as provided for in this Act in reference to grapevines, with like powers; and the salary and traveling expenses of such officer shall be fixed by the said board at the same amounts provided for in the case of the Chief Executive Viticultural Officer; and the said board shall have power to establish such quarantine rules and regulations as are required for the protection of fruit and fruit trees from the spread of insect pests.

Pursuant to this section, the Board of State Viticultural Commissioners, at a meeting held on March 12, 1881, adopted the following resolution:

> *Resolved*, That before taking any definite action in relation to horticulture, there shall be organized, under the auspices of this board, an Advisory Board of Horticulture, to consist of eleven members, to be selected and appointed as follows: Each district commissioner shall nominate one member to represent the horticultural interests of his viticultural district, and each commissioner for the State at large shall nominate one member for the State at large, and the executive committee of the State Horticultural Society shall be invited to nominate two members for the State at large. The members of said

Advisory Board of Horticulture shall be selected among citizens of this State especially qualified, by practical experience and study, in horticultural pursuits. The nominations shall be made to the president of this board, who shall immediately notify the persons selected, and request them to convene in this city, at the office of this board, on the fifth of April next, for the purpose of permanent organization and consultation. Said Advisory Board shall be requested to coöperate with this board, and to make such recommendations relating to the horticultural interests of the State, and the appointment of a horticultural officer, as they may think proper. Said Advisory Board shall have the privilege of using the general meeting-room at the offices of this board, when suitable accommodations shall be provided for their meetings, and the secretary of this board shall keep a record of their proceedings, and issue all notices of their regular and special meetings, which shall be held at their offices at such times as shall not conflict with the work of this board, in accordance with the will of said Advisory Board; provided, however, that they shall hold not less than four regular quarterly meetings. In case of any vacancy in said Advisory Board, caused by the failure of the executive committee of the State Horticultural Society to nominate, within thirty days after being requested to do the same, such vacancy shall be filled by the vote of a majority of the members, nominated by members of this board.

The nominations made by the President of the Board of State Viticultural Commissioners were as follows: A. Cadwell, Commissioner for the Sonoma District; W. W. Smith, Commissioner for the Napa District; M. T. Brewer, Commissioner for the Sacramento District; W. B. West, Commissioner for the San Joaquin District; Felix Gillet, Commissioner for the El Dorado District; Albert S. White, Commissioner for the Los Angeles District; S. F. Chapin, Commissioner for the San Francisco District; Charles H. Dwinelle, Commissioner for the State at Large; Matthew Cooke, Commissioner for the State at Large; Charles H. Shinn, Commissioner for the State at Large; Ellwood Cooper, Commissioner for the State at Large.

The horticultural interests of the State at this time were in their most vigorous condition and growing rapidly, and it was soon found that what had been a mere adjunct to the Viticultural Commission was rapidly outgrowing its parent in importance, and that its work was restricted in consequence of its connection. Therefore, an Act was prepared and introduced in the twenty-sixth session of the State Legislature, providing for the establishment of a State Board of Horticulture, consisting of nine members, seven of whom were to be selected from the seven horticultural districts into which the State was divided, and two were to represent the State at large. This Act was approved and became a law on March 13, 1883, and under it we operated until the Legislature, in its wisdom, passed the following Act in 1903:

AN ACT TO CREATE A STATE COMMISSION OF HORTICULTURE.

[Approved March 25, 1903.]

The People of the State of California, represented in Senate and Assembly, do enact as follows:

SECTION 1. The office of State Commissioner of Horticulture of California is hereby created. It shall be the duty of the Governor, within forty days after the passage of this Act, to appoint a citizen and resident of this State to hold said office of State Commissioner of Horticulture, who must at the date of his appointment be a skilled horticulturist and entomologist. The term of office shall be for four years, and until a successor is appointed and qualified. The Governor may remove such Commissioner from office at any time, upon filing with the Secretary of State a certificate of removal signed by the Governor. In case of a vacancy in said office by death, resignation, removal from office, or other cause, the Governor shall fill the vacancy for the unexpired term. The salary of said Commissioner shall be two hundred and fifty dollars per month, and he shall be allowed in addition a sum not to exceed five hundred dollars yearly for traveling and incidental expenses necessary in the discharge of his duties herein provided for. Such Commissioner may appoint a clerk at a salary of one thousand five hundred dollars per year, who shall perform the duties required of him by such Commissioner. In appointing such Commissioner and his successor or successors, it shall be the duty of the Governor to disregard political affiliations, and be guided in his selection entirely by the professional and moral qualifications of the person so selected for the performance of the duties of said office. The office of said Commissioner shall be kept open every day except holidays, and shall be in charge of the clerk during the absence of such Commissioner. The main office of such Commissioner shall be at the City of Sacramento. The Secretary of State shall furnish and set aside in the capitol a room or rooms suitable for offices for said Commissioner, and if the Secretary of State shall make and file an affidavit with the said Commissioner stating that it is not possible for him, as such Secretary of State, to provide and set aside an office for said Commissioner in the capitol, or in any State building under his control, because there is no such office room or rooms available, then, and after the making and delivery of such affidavit to such Commissioner, the said Commissioner may rent rooms convenient and suitable for his offices under this Act, at a rental not to exceed five hundred dollars per year. Said Commissioner may also keep and maintain an office in the City and County of San Francisco at a yearly rental not to exceed the sum of five hundred dollars, and may appoint a Deputy Commissioner who shall be an expert entomologist and horticulturist, to have charge of said office under said Commissioner, and to perform any and all duties which said Commissioner may require of him under this Act, and shall fix the monthly compensation of such deputy at two hundred dollars per month. Such deputy shall hold his position during the pleasure of such Commissioner, and may be removed from his office or position at any time by said Commissioner filing with the Secretary of State a certificate signed by said Commissioner so removing such deputy. Said Commissioner may also appoint, by and with the approval of the Governor, such temporary deputies from time to time as may be required for quarantine purposes under this Act, and such temporary deputies shall receive such compensation per diem as may be specified in the writing so approving such appointment. If there be not sufficient furniture and office appliances turned over to such Commissioner by the State Board of Horticulture heretofore existing, to furnish and equip properly the office or offices for such Commissioner at Sacramento and San Francisco aforesaid, the said Commissioner may, by and with the approval of the Governor, purchase for the use of his said office or offices, such furniture and appliances as may be necessary therefor, and from time to time, at an expense not to exceed a sum to be mentioned in such approval, which expense, together with all other expenses authorized by this Act, is hereby allowed for the purposes specified.

Sec. 2. Upon taking office under this Act such Commissioner shall be entitled to receive and have turned over to him as such Commissioner all the books, records, and property in the possession, charge, custody or control of the State Board of Horticulture heretofore existing, and all such property shall be delivered to such Commissioner upon demand. Such Commissioner shall be deemed for such purposes the successor of said board.

Sec. 3. Such Commissioner shall collect books, pamphlets, and periodicals and other documents containing information relating to horticulture, and shall preserve the same; collect statistics and other information showing the actual condition and progress of horticulture in this State and elsewhere; correspond with horticultural societies, colleges and schools, and with the County Boards of Horticulture existing or that may exist in this State, and with all other persons necessary to secure the best results to horticulture in this State. He shall require reports from County Boards of Horticulture in this State, and may print the same or any part thereof as he may select, either in the form of bulletins or in his annual report, or both, as he shall deem proper. He shall issue and cause to be printed and distributed to County Boards of Horticulture in this State, and to all other persons whom he may deem proper, bulletins or statements containing all the information best adapted to promote the interest and protect the business and development of horticulture in this State. Such Commissioner shall be deemed to be the State horticultural quarantine officer mentioned in chapter seventy-six of the laws of eighteen hundred and ninety-nine, for the purpose of that Act, and shall be empowered to perform the duties which under that Act are to be performed by the State horticultural quarantine officer; *provided*, that any inspection therein authorized, when made by such Commissioner, must be with the approval of the Governor, and as provided by this Act.

SEC. 4. Said Commissioner may, by and with the approval of the Governor, establish, maintain, and enforce such quarantine regulations as may be deemed necessary to protect the nurseries, trees, shrubs, plants, vines, cuttings, grafts, cions, buds, fruit-pits, fruit, vegetables, or other articles of horticulture, against contagion or infection by injurious disease, insects or pests, by establishing such quarantine at the boundaries of this State or elsewhere within the State, and he may make and enforce, with the approval of the Governor, any and all such rules and regulations as may be deemed necessary to prevent any infected stock, tree, shrub, plant, vine, cutting, graft, cion, bud, fruit-pit, fruit, vegetable, or other article of horticulture, from passing over any quarantine line established and proclaimed pursuant to this Act, and all such articles shall, during the maintenance of such quarantine, be inspected by such Commissioner or by a deputy appointed in writing by said Commissioner with the approval of the Governor, and he or the deputy so conducting such inspection shall not permit any such article to pass over such a quarantine line during such quarantine, except upon a certificate of inspection signed by such Commissioner or in his name by such a deputy who has made such inspection, unless such article has been immediately prior to such passage inspected by an officer or agent of the United States entitled to inspect the same, and such officer or agent has granted permission for such passage. All approvals by the Governor given or made pursuant to this Act shall be in writing and signed by the Governor in duplicate, and one copy thereof shall be filed in the office of the Secretary of State, and the other in the office of said Commissioner before such approval shall take effect.

SEC. 5. Upon information received by such Commissioner of the existence of any infectious disease, insect or pest, dangerous to any such article, or to the interest of horticulture within this State, or that there is a probability of the introduction of any such infectious disease, insect or pest into this State or across the boundaries thereof, he shall proceed to thoroughly investigate the same, and may, by and with the approval of the Governor, establish, maintain and enforce quarantine as hereinbefore provided, with such regulations as may be necessary to circumscribe and exterminate or eradicate such infectious diseases, insects or pests, and prevent the extension thereof, and is hereby authorized to enter upon any grounds or premises, and inspect any stock, tree, shrub, plant, vine, cutting, graft, cion, bud, fruit-pit, fruit, vegetable, or other article of horticulture, or implement thereof, or box or package pertaining thereto, or connected therewith, or that has been used in packing, shipping or handling the same, and to open any such package, and generally to do, with the least injury possible under the conditions to property or business, all acts and things necessary to carry out the provisions of this Act.

SEC. 6. Upon the discovery of any such infectious disease, insects or pests, such Commissioner shall immediately report the same to all County Boards of Horticulture, together with a statement as to the best known means or method for circumscribing, exterminating or eradicating the same, and shall state therein specifically what treatment or method should be applied in each case, as the matter may require, with a detailed statement or prescription as to the method of making or procuring, and of applying any preparation or treatment so recommended therefor, and the times and duration for such treatment, and if chemicals or articles be required other than those usually obtainable at any town, the place or places where they are most readily to be obtained; and upon the receipt of such statement by any County Board of Horticulture or any member thereof, it shall be the duty of such County Board of Horticulture to distribute such statement in printed form to every person owning or having charge or possession of any orchard, nursery stock, tree, shrub, or article of horticulture within their county, where it is supposed by said County Board there is any danger to the interests of horticulture, and such a statement must be served with or be a part of the notice to be given to the owner or owners, or person or persons, in possession of any orchard, nursery, tree, shrub, or article of horticulture, referred to, provided for, and required to be served in and by section two of chapter one hundred and eighty-three of the laws of eighteen hundred and ninety-seven, or any amendments which have been or may be made thereto.

Sec. 7. Whenever it shall become necessary to establish quarantine under this Act, if there be any authorities or officers of the United States having authority to act in such matter, or any part thereof, the said State Commissioner of Horticulture shall notify such authority or officers of the United States, and coöperate as far as possible with such authorities or officers of the United States wheresoever the jurisdiction of the United States extends and is being exercised, and shall obtain, whenever desirable and possible, the assent of the proper authority or officers of the United States to the establishment or change of quarantine lines, so as to most effectively and speedily accomplish the purposes of this Act. The said Commissioner shall at once notify the Governor of all quarantine lines established under or pursuant to this Act, and if the Governor approve or shall have approved of the same or any portion thereof, the Governor shall issue his proclamation proclaiming the boundaries of such quarantine, and the nature thereof, and the orders, rules or regulations prescribed for the maintenance and enforcement of the same, and shall publish such proclamation in such manner as he may deem expedient to give proper notice thereof.

Sec. 8. The said State Commissioner shall be ex officio a member of all County Boards of Horticulture existing or that may be created or exist in this State pursuant to law, whenever he is present and acting with said County Board within the county, where such County Board exists, but when he is not so present in such a county, acting with such County Board, then the said County Board shall have all the power and authority conferred on it by law, and may exercise such power by the action of the members of such County Board or a majority thereof. The reports which County Boards of Horticulture are required by law to make, or which they may desire to make, shall, after the passage of this Act, be made to the State Commissioner of Horticulture.

Sec. 9. It shall be the duty of the Superintendent of State Printing to print and deliver to the State Commissioner of Horticulture, upon the written request of said Commissioner, all such bulletins, orders, rules, regulations, statements, reports and other printed matter, as the said Commissioner may deem necessary to have and use for carrying out the purposes of this Act, and it shall be the duty of the Secretary of State to cause to be prepared and furnished to such State Commissioner all stationery, paper, blank forms, envelopes, and writing material needful and convenient for use in the office of such Commissioner.

Sec. 10. It shall be the duty of said State Commissioner to report in the month of January in each even-numbered year to the Governor, and in each odd-numbered year to the Legislature of this State, such matters as he may deem expedient or as may be required either by the Governor or Legislature, and to include a statement of all the persons employed, and of moneys expended under this Act, by itemized statement thereof.

Sec. 11. Any person willfully refusing to comply with orders lawfully made under and pursuant to this Act shall be guilty of a misdemeanor, and upon conviction shall be fined not to exceed five hundred dollars.

Sec. 12. All moneys paid under this Act shall be paid by the State Treasurer from moneys appropriated for the support of the State Commissioner of Horticulture, and expenses other than the salary of the Commissioner, the compensation of his clerk and Deputy Commissioner, as allowed and provided by this Act, must be certified by the said Commissioner and be approved by the State Board of Examiners before being audited or paid. Any moneys remaining of any appropriation heretofore made or that may be appropriated for the use or support of the State Board of Horticulture are hereby appropriated to the support of the State Commission of Horticulture, and are directed to be applied to the payment of claims and expenses under this Act.

SEC. 13. The sum of four thousand dollars is hereby appropriated for the use and support and to pay the expenses of the State Commission of Horticulture for the fiscal years commencing July first, nineteen hundred and three, and July first, nineteen hundred and four, under this Act.

SEC. 14. Chapter sixty-three of the laws of eighteen hundred and eighty-three, chapter seven of the laws of eighteen hundred and eighty-five, chapter eighty-six of the laws of eighteen hundred and eighty-nine, and chapter one hundred and ninety-four of the laws of eighteen hundred and ninety-one, are hereby repealed.

SEC. 15. This Act shall take effect immediately.

REPORTS.

Of the Commissioner of Horticulture for 1903.
Of the Commissioner of Horticulture for 1904.
On Utah Conditions.
On Oregon Conditions.
Of the Deputy Horticultural Commissioner.

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REPORT OF THE COMMISSIONER OF HORTICULTURE, FOR 1903.

Office of Commissioner of Horticulture,
State Capitol, Sacramento, Cal., January 30, 1904.

To His Excellency, George C. Pardee, *Governor:*

Sir: I have the honor to submit to you herewith my report showing the operations of this department during the year 1903, together with a report of its financial condition for the six months ending with December 31, 1903.

For many years past, the work of the Horticultural Quarantine Officer of the late State Board of Horticulture, at San Francisco, was greatly hampered owing to the cramped and inadequate quarters which he occupied in the upper floor of the Chief Wharfinger's building. Here the work was confined to one small room, which was greatly overcrowded and subject to extremes of heat and cold, rendering the propagation of parasitic insects, which formed a great and valuable part of the work of this department, difficult and unsatisfactory. Upon my appointment as State Horticultural Commissioner, arrangements were made for securing more convenient and available quarters. To this end, a room was assigned us in the new Ferry Building, where we now have sufficient space for the proper carrying on of our work. The new quarters are well lighted, warm, and sufficiently large to allow of work among the breeding-cases in which the beneficial insects are propagated. Large windows facing the west give abundant sunlight, so necessary for the propagation of the beneficial insects. The room assigned to us was divided into three, and a large part of it divided off with a glass partition. This forms the insectary, and here, with plenty of light, warmth, and room—three important requisites—we are now enabled to do excellent work along these lines. Another part was partitioned off for a private office, in which are kept the library, private correspondence, etc., while the third part was left for a public or reception office, which is always open to visitors. It is here that we have our collection and cabinet of specimens. I take pleasure in reporting that in this important branch of our work we are well equipped for service.

The quarantine work is one of the most important branches of our labors, and is steadily growing in volume. With the increasing importance of San Francisco as a port of entry, the volume of shipping increases, and consequently the work of the department is enlarged. It is now no infrequent matter for three or even four foreign steamers to arrive in one day. The duties have increased to such an extent that it was not possible for one man to attend to them all, and it became necessary that we have an assistant in order the more efficiently to look out for imported fruits, plants, etc., and to guard against the introduction of insects and diseases dangerous to horticulture, and with which we are not at present afflicted; also to help in the work of caring for, feeding, and distributing beneficial insects. In the height of the breeding season, the work of attending to the beneficial insects is very pressing and requires expert service almost day and night. It was formerly little trouble to secure abundant feed for our parasitic insects, but with the continuous distribution, spread, and propagation of these, the work of overcoming the destructive pests has been so thorough that we are now put to a great deal of trouble in securing the necessary scale insects for feeding and propagating our beneficial parasites. It is often the case that our assistant is compelled to visit remote places in order to discover the necessary insects required for feeding the beneficial ones. This work entails considerable expense, and the demands upon us in this direction are daily increasing, as applications are made for beneficial insects not only from all parts of our own State, but also from nearly every other State in the Union, and from many foreign countries. In this great work California has been practically the pioneer, and it is with a feeling of pride that we are able to point to the success we have achieved therein, and also to the fact that the world is following in our footsteps and working to suppress noxious insects and pests with their natural enemies. So thorough has been this work that to-day in California we have very few serious pests for which we have not an effective enemy. There is not a scale insect which has not its check, internal or external, and while some are not as effective as could be wished, very many are so thorough in their work that their host scales may be removed from the list of California pests.

Letters received daily and in great numbers from every part of the State, speak highly of the parasites and give us great encouragement in this branch of the work. Satisfaction with this branch is universal, and from all reports it is evident that we have succeeded in overcoming very many of the worst pests with which the fruit-grower had to contend, and that it is only a question of time when fighting pests with artificial means and with the costly methods now in vogue will become a thing of the past, and the enormous outlay now involved for machinery, materials, and labor will be saved to the fruit-grower.

The work of the quarantine department is not confined to the city of San Francisco. In addition to inspecting for noxious insects all vessels which arrive at the port, and propagating and distributing beneficial insects, the Deputy Horticultural Officer is frequently required to visit outside counties in the discharge of his duties. Very many, in fact most, of our fruit-growing counties have their Boards of County Horticultural Commissioners. In several instances these have been appointed during the past year, and it has been necessary to visit them and give instructions in regard to their duties and in the proper methods of inspecting and fumigating infested stock coming into their respective counties. In addition to this, instructions are given for fighting such pests as are already established.

I have found the duties of the Sacramento office steadily increasing. Upon entering upon my term of office I found there were several counties in which there were no Horticultural Commissioners. Correspondence has been entered into with the Boards of Supervisors of all such counties, and in some instances personal visits had to be made; but I am pleased to report success in all cases.

We have endeavored to keep in constant touch and harmonious relations with all the fruit interests of the State, and are able to report the same as being generally in a fairly good condition. In some branches there have been conflicting interests, but strong efforts are being made to harmonize these, and in other cases difficulties have been adjusted. Growers, generally, recognize the imperative need of working together, and to this end there are very many strong organizations among the fruit-growers of California. It has been the policy of this department to encourage this condition, as without harmonious co-operation in the handling of the products, ruin would inevitably result in many branches of fruit-growing.

An important branch of our work has been the establishment of a plant quarantine at the port of San Diego. Through an understanding had with the collector of that port and with the resident Horticultural Commissioner, we are enabled to quarantine any disease- or insect-infested fruits or plants that may be offered for entry at that port. This effectually closes San Diego as a point of entry for any pests that might otherwise threaten us from that source.

Fruit-growers in the northern counties lodged complaints with this office to the effect that Butte County, owing to the failure of the Board of Supervisors to appoint an efficient Board of Horticultural Commissioners, was leaving an open way for the introduction of serious pests and diseases into our State. The matter was taken up with the Supervisors, and I am pleased to state that when the matter was presented to them in its proper light, they were willing to comply with the law, and we now have a good working Board of Horticultural Commissioners in that county.

It has been my wish and persistent effort to have the fruit interests in close relation with this office, and in this I am pleased to report that I have found all willing and anxious to co-operate with me in my efforts.

A feature of the work in this office during the past season has been the reception and distribution of reports from our consuls in those countries producing and shipping fruits that may come in competition with our own. Through the courtesy of the Secretary of State, at Washington, D. C., and by an arrangement made with the Commercial Museum of San Francisco, we have been enabled to receive regular reports as to the condition of such fruits in Europe and elsewhere. This has added very greatly to the work of the office, and in some cases we have sent out two of these in a week, mailing from two hundred and fifty to four hundred copies, usually selecting such growers as would be most benefited by their reception. In these cases the most expeditious work was necessary, as no delay could be permitted in getting these reports into the hands of the growers. To expedite this work we have introduced an Edison oscillating mimeograph and addressing machine, and are now in good shape to handle the reports during the coming season.

Work connected with the holding of fruit-growers' conventions has been very much heavier this year than usual, first on account of having held two (in May at Los Angeles, and in December at Fresno), and also on account of our endeavor to give them a wider scope in the work. We are pleased to report that both of these conventions were eminently successful and were attended by large numbers of the leading fruit-growers of the State, very many of whom took an active part in the deliberations. A large edition of the report of the Los Angeles convention, the twenty-eighth, was printed and distributed, while the report of the Fresno convention is now ready for the printer and will soon be in the hands of the fruit-growers of the State.

Since the abolition of the State Board of Viticulture, there have been no viticultural conventions held in the State, and the viticulturists have each year taken more interest in the work of the fruit-growers' conventions, until the discussion of grape-growing, raisin and wine making, and the marketing of vineyard products, now forms a most important part of the matter considered at our conventions, in which orchardists and vineyardists are equally represented. This has greatly widened the scope of our work, while adding somewhat to our labors.

At the request of the World's Fair Commissioners, we have prepared an exhibit for display at the St. Louis Exposition. This has required considerable time and the outlay of some money. But we realize the necessity of laying before the world, on that occasion, the knowledge of the great work that is being done in the line of horticulture in our State, and especially in our peculiar work of fighting insect pests with their natural enemies.

While I appreciate the fact that the strictest economy is necessary, I also deeply realize that justice to California's greatest industry will, sooner or later, require a largely increased service, in order to more thoroughly and effectively protect and advance this great and growing source of revenue. Very many experiments should be made, a more perfect system of quarantine be established, and a thorough search be made the world over, or at least in promising sections, for new or more effective enemies of our injurious pests.

Following are the expenditures of the Commission of Horticulture from July 1, 1903, to January 1, 1904:

Books and papers	$20 67
Express	25 82
Extra help	73 50
Freight and cartage	19 60
Janitors	120 00
Miscellaneous	38 95
Microscopic supplies, chemicals, etc.	71 70
Addressing machine, and accessories	68 38
Office and mimeograph supplies	21 88
Reporting vessels	85 00
Repairing and furnishing	76 15
Salary of San Francisco Deputy Inspector	386 65
Salary of stenographer	300 00
Traveling expenses of Deputy Inspector (San Francisco)	2 10
Traveling expenses of Deputy Commissioner (San Francisco)	148 85
Traveling expenses of Clerk	177 80
Traveling expenses of Commissioner	169 50
Telephones and telegrams	91 36
Total	$1,897 91

I am pleased to add that I have met with the most kindly treatment and a most hearty sympathy with my labors from all sources and from all classes; nothing has occurred to mar the harmony of my work, and there have been no complications that have not been easily and harmoniously adjusted.

In conclusion, I would say that the employés under my direction have shown great energy and efficiency in their respective departments, in which each has been perfect, and I can speak of one and all only with the greatest praise.

I submit to you this brief report, and, believe me, with the highest consideration,

Your obedient servant,

ELLWOOD COOPER,

State Commissioner of Horticulture.

REPORT OF THE COMMISSIONER OF HORTICULTURE FOR 1904.

To the Honorable Senate and Assembly of the State of California in Legislature assembled:

GENTLEMEN: In accordance with Section 10 of the law under which this Commission was created, and which provides that "it shall be the duty of said State Commissioner to report in the month of January in each even-numbered year to the Governor, and in each odd-numbered year to the Legislature of this State, such matters as he may deem expedient or as may be required either by the Governor or Legislature, and to include a statement of all the persons employed, and of moneys expended under this Act, by itemized statement thereof," I have the honor to present the following as my annual report:

The law provides for one Deputy State Horticultural Commissioner, who is also the State Horticultural Quarantine Officer. The work of this office has been directed to preventing the entrance into our State of any new tree or fruit pests or diseases from abroad, and, to this end, all importations are carefully inspected. If any new pest is discovered, the stock upon which it is found is destroyed or refused entrance. If a pest or disease prevalent in our State and susceptible of eradication is found, the stock is properly treated, the pest destroyed, and the stock is then passed. If no pest or disease is found, the stock is passed at once. In this work we have received the cordial assistance of the railroad companies, the express companies, the post-office department, the various shipping agencies, and especially the custom-house authorities, all of whom have aided us to the extent of their power.

In the prosecution of this work we are frequently called to different parts of the State—to those sections where no County Horticultural Commission exists, and in which, under the law, the work devolves upon this office.

With new shipping and transportation lines coming into the State, work in this direction is rapidly increasing in volume, and it is impossible for one man to do it all. I have therefore been compelled to appoint an assistant at San Francisco and to provide for his compensation out of the appropriation made for the support of this department. The work here should be still further enlarged, but with the funds at my disposal this is impossible. The demands upon this branch are steadily increasing, and it is of the most vital importance to our fruit-growers that no plants, or other form of vegetation, should be admitted within our State until they have been properly inspected and passed on as clean. With the many orchard pests of the East finding entrance through the Orient, the very existence of our most important industry depends upon thorough and efficient work in this direction.

The next most important work of this Commission and of its predecessor, the State Board of Horticulture, has been the discovery and introduction of the natural enemies of those pests already prevalent here. It is a fact that our worst pests are introduced species. Having been introduced without their natural checks, and having nothing to stay their spread, they have increased in destructive quantities, until, in self-protection, we have been forced to fight them with artificial means—a method at once enormously costly and ineffective, for while we may succeed by endless labor, year after year, in somewhat checking their ravages, we can never hope, by artificial means, to eradicate them, or even to reduce them below the danger limit. We have learned that insects in their natural habitat are pests only to a limited degree, and that wherever an insect is native there will be found some natural check which prevents its undue increase and keeps it below the danger limit.

It has ever been the effort of this department to discover the original home of our various pests and to secure and introduce their natural checks, and so well have we succeeded that we have parasites for most of our worst scale pests and also for many other of our insect enemies. One of the last and most effective workers in our interests along these lines is the now well-known *Scutellista cyanea*, which, in the past three years, has practically subdued the black scale, formerly one of the worst pests of our fruit-growers.

At the present time, the most serious of all the fruit pests of the State, as it probably is of the greater part of the United States, is the codling-moth, which does so much damage to our apple crop. The cost of fighting this pest is enormous in the outlay of material and labor. In order to save any portion of their crop, apple-growers have to spray continually through the summer; but in many sections, even where the work was faithfully done, the results have hardly justified the labor. Unless the best of material is used, and at the proper season, the labor expended may be entirely thrown away.

We know that the codling-moth was imported into the United States from Europe, and from all that we can learn it is not a serious pest there. No spraying and but little other work is ever done there to keep it under control, and yet European orchards have a very small percentage of wormy apples. That there is some natural enemy to the codling-moth there is no doubt, and we have undertaken the work of searching it out and introducing it for the benefit of the apple-growers of California.

In following out this line of work, Mr. John Isaac, of our department, knowing that Mr. Leonard Coates was visiting the apple-growing sections of England, communicated with him, requesting him to investigate this matter and ascertain the prevalence of the codling-moth there, the extent of damage suffered from its ravages, and the measures, if any, taken to check it. Following is Mr. Coates's answer, which will be found of interest, and which tends to corroborate what has heretofore been known, that the codling-moth is not a serious pest in its native land, and that there are some natural checks which keep it under control:

OAKLANDS, STOKEINTEIGNHEAD, NEAR TEIGNMOUTH, ENGLAND,
September 8, 1904.

MY DEAR MR. ISAAC: I have been looking into the matter of codling-moth in English apple orchards since receiving your letter, and can only come to the conclusion that the codling-moth must have in these orchards some parasitic enemy which serves to keep it in check; or there must be a larger number of birds that prey upon it than in America. Birds of the wren family are very numerous—may they not devour many in the pupa form? Swallows fly among the trees until long after dusk and through the several hours of the twilight—may they not consume many moths?

There is no general system of spraying, and in the old apple districts—where I now am—in Devonshire and in Herefordshire, where I was staying some time ago, little, if anything, seems to be done.

One large Kentish grower, recently deceased, has put his theory into print, as well as into practice. He fights codling-moth almost exclusively by placing greasy bands around the trunk, high up, freshening them the first week in May, because "the maggot has been breeding under the bark of the tree (without spinning a web or making a cocoon) since the day it left the fallen apple or tree." * * * "The warm May sun brings them from their winter quarters, and, with an irresistible power, they ascend the tree. In a few days, if not arrested then, they change into a chrysalis, remaining in this state until June, when they are moths once again."

You see his point (allowing for difference in time for warm weather to begin) is to catch the worm at the time when it crawls upward from the lower part of the trunk, where it has been in temporary hiding.

Apart from all that, the fact remains that in these old Devonshire orchards—and you know what they are and have been for hundreds of years—I can find scarcely a wormy apple; they are in a state of nature, whose natural entomological and ornithological equilibrium, so to speak, has never been disturbed.

In these orchards the land is never plowed. Sheep—and such sheep!—get fat on the lush feed; the trees are never pruned and the fruit is never thinned.

I said before that spraying in these districts is unknown. Given a reasonable amount of pruning and good thinning in years when fruit sets heavily, and any one can make money in old Devon. As it is, buyers are plentiful, offering good prices for those trees on which the fruit is of fair size. But most of the trees are a perfect mass of little apples, no good for anything but cider.

Shall be glad to hear from you when you have time to write.

Yours sincerely,

LEONARD COATES.

I am pleased to state that we have secured an interest in the services of Mr. George Compere in conjunction with the West Australian Government, and that he is at the present time making a special study of the codling-moth and its parasites. He has found two different parasites working upon the pest in the parts of Europe which he has visited, and has secured and forwarded to this department a large number of these beneficial insects, which have arrived in good condition. They are now being bred in our insectary in San Francisco, and we hope that, by the coming season, we shall have them in sufficient numbers to establish them in the apple districts of California.

Notice reached this office during the past season that several injurious insects not prevalent in our State were in existence in Utah and Oregon, both close neighbors of California, and from which sections large quantities of nursery stock are imported into our State. I instructed Mr. Isaac, of this department, to make a thorough investigation in both cases and to report to me. His report on this matter will be found elsewhere.

During the past year Mr. Craw, who has for a number of years acted as Chief Horticultural Quarantine Officer of the State Board of Horticulture, and of the State Commission of Horticulture since its establishment, received a very flattering offer from the Hawaiian Government to transfer his services to that territory. As we were unable to make an equal offer, he was constrained to accept it and sever his relations with this Commission. His resignation, given below, was accepted and went into effect on the last day of July, 1904. I appointed Mr. Edward M. Ehrhorn, of Mountain View, as his successor in office. Following is Mr. Craw's letter of resignation:

SAN FRANCISCO, July 19, 1904.

HON. ELLWOOD COOPER, *Commissioner of Horticulture:*

DEAR SIR: I herewith beg to inform you that I have accepted the position of Quarantine Officer offered me by the Board of Agriculture and Forestry of Hawaii and the Hawaiian Sugar Planters' Association, and hereby tender you my resignation as Deputy Horticultural Commissioner, to take effect the end of July, 1904.

In doing this, I can not allow the opportunity to pass of thanking you personally, also the Horticultural Commissioners and inspectors, together with the United States customs officers and dock officials, for the support and assistance rendered me in the discharge of my duties.

Respectfully yours,
ALEXANDER CRAW.

Owing to the prevalence of the Morelos orange-maggot in Mexico, where a very large percentage of the oranges and sweet limes are infested, we have placed a quarantine upon these fruits in California and none of them are allowed to enter our State. This has been a purely protective measure, for, from reports received, a very large amount of the fruit of our sister republic is in such shape that it is unmarketable, owing to the prevalence of maggots in the pulp. Sometimes as many as twelve or fifteen of these disgusting insects will be found in a single specimen, and should this insect find its way into our orange sections it would be as serious a pest as is the codling-moth in our apple-growing sections. This action on our part has been drawn to the attention of the Mexican Government, and a voluminous correspondence bearing thereon has passed between this department, the Governor's office, the State Department at Washington, and the Government of Mexico. Communications received bearing on this matter are presented elsewhere.

At the request of the Louisiana Purchase Exposition Commissioners, we made a small exhibit of beneficial insects at St. Louis, illustrating the California method of fighting pests. This was labeled "Bug vs. Bug," and attracted much attention. We have received a great deal of correspondence from Eastern parties bearing upon this subject, and making inquiries into our method of securing, breeding, and distributing beneficial insects, and very many other States and countries are now profiting by California's experience in this direction. Elsewhere, under the title of "Bug vs. Bug," we give a full list of the insects on exhibition there, with a description of the work they do in California.

This exhibit will be returned to us, and it is my intention to install it at the Lewis and Clark Centennial at Portland during the coming summer. I do not think we can too widely make known the knowledge of the good work that is being done by parasites in our California orchards.

We have enlarged our work in the line of distributing consular reports during the past season, and have made arrangements for the reception of reports from our consuls in all the fruit-growing sections of the world, bearing on such fruits as come into competition with those of California. Very many of these reports have been received by us during the past summer and have promptly been copied and mailed to the fruit-growers interested therein. To accomplish this work we have to use a mimeograph and addressing machine, and now have a very large list of names of the fruit-growers of the States to whom we are sending these and other publications of interest. This has added very largely to the work of our Sacramento office.

The prevalence of various insect pests has been reported at our office from different parts of the State. In some parts these have appeared in large numbers and have done much damage, but the swarms in which they appear have been local and their destructive work confined to limited areas. Elsewhere, under the title of "Insects of the Year," we give a review of the prevailing insects and the damage done by them.

Since the organization of this Commission we have held two very large Fruit-Growers' Conventions, the thirtieth having been held in San José on December 6 to 9, 1904. Although this was the Thirtieth Fruit-Growers' Convention, it was the largest ever held in the State, and I am pleased to note that our conventions are annually increasing in popularity and that good work is being accomplished by them. At the Twenty-ninth Convention a motion was made and carried that a committee of fifteen be appointed to draft ways and means for a combination of the fruit-growers of the State for their own interests—that they might enlarge their markets and receive better compensation for their labors. This subject was handled at the Thirtieth Convention, and out of it we hope that better markets and better prices will result to the growers of our State.

The Committee of Fifteen, so appointed, made the following report to me, outlining their work:

The Committee of Fifteen, ordered appointed by the Twenty-ninth Annual State Fruit-Growers' Convention, to devise and put into effect a plan or plans to promote co-operation among producers of all classes of cured fruit throughout the Pacific Coast, have unanimously adopted the following resolution as a basis for action:

Resolved, That it is the sense of this committee that the fruit-growers of the State, wherever practicable, organize local associations for the preparation of fruit for market, and that these several associations then connect themselves with some selling agency to make sale of their crop at the best market rate, at such times and for such prices as the agency acting in conjunction with associate organizations may deem best. In case no such selling agency is available or satisfactory, we recommend that they proceed to establish one by delegate representative from each such local association.

Also, that we further recommend that all selling agencies composed of organized growers unite by delegate membership to form a central selling and purchasing agency by which the highest advantages in buying and selling may be secured, without, however, relinquishing any brand, trademarks, or other advantage peculiar to each, but eliminating to the greatest possible extent injurious competition with each other in the market, and in every practicable manner extending the consumption of California cured fruit.

Also, that we disclaim any purpose to antagonize any interest by such recommendations, being fully aware that a large percentage of the business will remain to be done by established organizations. But we believe that when a considerable portion of the growers thus become organized, it will be possible to find a common basis of agreement with such interests by which market values may be sustained and regulated better than at present.

Also, that we further recommend that such centralized agency, at the earliest practicable moment, develop a plan for efficiently advertising California cured fruits, and placing them with the consumers at prices which shall provide for a fair average profit to the grower, wholesaler and retailer.

We further recommend the formation of a committee to procure and make available statistics in relation to the fruit products of the Pacific Coast and competing countries.

The following resolution was also unanimously passed:

Resolved, That a committee of three, with Mr. H. P. Stabler as chairman, be appointed to outline and put into operation a plan for increasing the consumption of the cured fruit of the State.

The chairman appointed on the committee with Mr. Stabler, Arthur R. Briggs and A. L. McCray.

The members of the Committee of Fifteen present were: A. R. Sprague, Sacramento, chairman; F. H. Baab, San José; F. G. Rodeck, Campbell; Arthur R. Briggs, San Francisco; H. P. Stabler, Yuba City; A. D. Bishop, Orange; W. P. Weber, Santa Paula; Thos. Jacob, Tulare; A. L. McCray, Fresno, secretary; B. F. Walton, Yuba City, who was elected to fill a vacancy on the committee.

The committee spent two days in earnest deliberations, and while at first wide differences of opinion were expressed, the members came to unanimous agreement in support of the plan above outlined.

The fruit conditions of the State during the past year have not been favorable. Heavy rains, with prevalent high winds during the blooming period, washed a great deal of pollen from the blossoms and prevented their fertilization. As a result, many varieties of fruit yielded very light crops, while few came up to the normal. Peaches have been exceedingly light in the greater part of the State; apricots in most places below normal; apples light; cherries fair to medium; and pears, except where the orchards were injured by the pear blight, were good. The orange crop both in southern and northern California has been unusually heavy, and grapes the largest crop ever produced. Further details of the fruit conditions of California, together with the imports and exports, will be found under the title of "Review of the Fruit Seasons."

I am pleased to call attention to the reports of the various County Horticultural Commissioners, which appear elsewhere, and to state that we find these gentlemen well informed in the line of their duties and conscientious in their performance. The County Horticultural Commissioners are a great auxiliary to us in the work of this department, for we frequently call upon them for assistance or information, and have invariably received ready response. Their reports show the condition of fruit in the various counties, the presence of insect pests and diseases, the means taken to eradicate them, and suggestions for the betterment of their work. These make a valuable addition to the present report, which should be read with attention.

I append the financial report of my office for the fifty-fourth and fifty-fifth fiscal years. This includes the expenditures of the State Board of Horticulture, which ceased to exist on March 25, 1903. From March 25, 1903, to April 27, 1903, the date of my appointment, there was an interregnum, but acting under the instructions of His Excellency, Governor George C. Pardee, the officers of the State Board of Horticulture continued their labors until the new Commissioner was qualified. The expenses incurred during this interim are also given, each under its appropriate head. The expenses of the State Board of Horticulture cover the period from July 1, 1902, to March 25, 1903, the interim from March 25, 1903, to April 27, 1903, and the Commission of Horticulture from the latter date to June 30, 1904.

EXPENDITURES DURING FIFTY-FOURTH FISCAL YEAR.

Expenses of State Board of Horticulture.

Cartage	$6 99	
Cuts and photos	51 75	
Extra help	64 20	
Express	45 73	
Furniture and repairing	95 35	
Fruit-Growers' Conventions	367 55	
Janitors	135 00	
Library	9 25	
Postage	313 30	
Miscellaneous	70 40	
Consular reports	50 00	
Reporting vessels	105 00	
Salaries of Special Agents	1,492 00	
Traveling expenses of Special Agents	238 60	
Traveling expenses of Secretary	17 95	
Traveling expenses of Commissioners	200 20	
Traveling expenses of Quarantine Officer	155 55	
Telephones and telegrams	91 29	
		$3,510 11

Expenses during the Interim.

Express	$3 85	
Janitors	15 00	
Library	50	
Postage	1 00	
Miscellaneous	2 10	
Reporting vessels	10 00	
Salary of Special Agents	114 00	
Traveling expenses of Special Agents	2 35	
Salary of stenographer	50 00	
Salary of Secretary	192 50	
Salary of Quarantine Officer	175 00	
Traveling expenses of Quarantine Officer	33 85	
Telephones and telegrams	9 05	
		$609 20

Expenses of Commission of Horticulture.

Cartage	$33 86	
Extra help	39 50	
Express	29 45	
Fruit-Growers' Convention	161 90	
Furnishing San Francisco office	227 90	
Furniture and repairing	161 18	
Janitors	37 50	
Library	66 25	
Postage	933 63	
Typewriter (Sacramento office)	100 00	
Mimeograph and supplies	57 13	
Microscope and accessories	41 45	
Signs for San Francisco and Sacramento offices	47 00	
Miscellaneous	80 78	
Reporting vessels	40 00	
Consular reports	25 00	
Salary of Special Agents	6 00	
Traveling expenses of Special Agents	123 90	
Traveling expenses of Commissioner	78 15	
Salary of stenographer	106 67	
Traveling expenses of Deputy Commissioner	11 60	
Telephones and telegrams	30 68	
		$2,439 53
Total expense, fifty-fourth fiscal year		**$6,558 84**

Appropriation	$5,000 00
Balance from fifty-third fiscal year	1,558 84
Total appropriation, fifty-fourth fiscal year	$6,558 84
Total expenditures, fifty-fourth fiscal year	6,558 84

EXPENDITURES OF COMMISSION OF HORTICULTURE FOR THE FIFTY-FIFTH FISCAL YEAR.

Books, papers, and periodicals	$65 55
Engravings, sketches, photos, etc.	230 90
Extra help	58 00
Express	72 42
Freight and cartage	35 80
Fruit-Growers' Convention	136 00
Furniture and repairing	263 12
Miscellaneous	98 53
Microscopic supplies and chemicals	102 05
Parasite food, mailing tubes, etc.	71 20
Reporting vessels	175 00
St. Louis exhibit	103 27
Salary of expert	334 03
Salary of Janitors, San Francisco and Sacramento offices	240 00
Salary of Deputy, San Francisco office	986 65
Traveling expenses of San Francisco Deputy	76 15
Salary of stenographer	600 00
Traveling expenses of Commissioner	420 12
Traveling expenses of Clerk	250 20
Traveling expenses of Deputy Commissioner	211 70
Telephones and telegrams	202 52
Total	$4,733 21
Appropriation, fifty-fifth fiscal year	$7,000 00
Expenditures, fifty-fifth fiscal year	4,733 21
Balance unexpended	$2,266 79

Respectfully submitted.

ELLWOOD COOPER,
State Commissioner of Horticulture.

LIBRARY OF THE UNIVERSITY OF CALIFORNIA

CONDITION OF ORCHARDS AND NURSERY STOCK IN UTAH AND OREGON.

REPORT ON UTAH CONDITIONS.

SACRAMENTO, CAL., July 29, 1904.

To HON. ELLWOOD COOPER, *State Commissioner of Horticulture:*

SIR: In accordance with your instructions, I have investigated the condition of nursery stock and orchards in Utah, with the view to discovering pests existing there and not found in our State, and which are liable to be imported on nursery stock.

I found no indication of any such diseases as peach yellows or rosette; nor, so far as I could ascertain, has the plum curculio found its way so far to the west. The Eastern peach-root borer (*Sannina exitiosa*), however, is quite common and is liable to be imported on nursery stock received from that State.

Another very serious pest which has not yet been reported in California exists there on the elm trees. This is the elm scale (*Gossyparia ulmi*). This scale was first found in the United States in 1884, since which time it has been gradually reaching to the West, until it has quite recently been reported from Nevada. In Salt Lake it is one of the most serious pests of the shade trees, hardly an elm tree being free from its attacks, and many of them being fairly covered with the insects. Of course, trees so attacked suffer severely, and many of them are killed through the action of the pest. This scale attacks all varieties of elm and is also found on the alders, but I believe that, so far as known, these are its only host plants. As the elm is one of the favorite shade trees of California, and is grown very extensively through a large part of the State, some endeavor should be made to prevent the introduction of this scale into our territory.

Very many of the pests common in California, I also found more injurious in Utah. The codling-moth and woolly aphis are exceedingly bad on the apple and pear trees. Very many of these trees are old, neglected, and furnish ideal breeding-places for these insects. The San José scale is very injurious in some sections, although it is reported as being on the decrease. Pear blight is found in many of the orchards in the northern part of the State, and the remedies applied are the same as those in vogue in our own State, namely, cutting back the infected portions of the tree and burning the portions cut out.

There is a very capable Horticultural Commission in existence in Utah. The State is divided into four horticultural districts, each having one representative on the board. There is also a provision for county horticultural commissioners, very much like those provided for by our California horticultural law.

The State Board of Horticulture has adopted a set of rules, formulas, and regulations formulated after those adopted by the late State Board of Horticulture of California. These provide for the inspection of orchards, the treatment of infested trees, and especially for the dipping and fumigation of all nursery stock which may be found infested.

I find that some considerable shipments of nursery stock have been made from Utah nurseries into our State, especially into the eastern counties, and I would recommend that the county horticultural commissioners of those counties be instructed to take special pains in examining, for peach-root borers, all such stock as may come into their counties, and wherever any indications of such pests are found that the trees containing them be condemned and destroyed.

I would also suggest that no elm trees be admitted and that all nursery stock coming from Utah be fumigated with hydrocyanic acid gas before it is passed. I think this precaution is necessary in view of the fact that the elm scale is found there and is not existing in our State, and that it is liable to be introduced on any nursery stock that may have been grown in an infested district.

Respectfully submitted.

JOHN ISAAC.

REPORT ON OREGON CONDITIONS.

SACRAMENTO, CAL., September 28, 1904.

To HON. ELLWOOD COOPER, *State Commissioner of Horticulture:*

SIR: Acting under your instructions, I have made an investigation into orchard and nursery conditions in the State of Oregon, and report as follows:

I found a great deal of growing interest being manifested in fruit-raising in the Willamette Valley and other portions of Oregon, the favorite fruits being apples, prunes, and cherries, in the order named. Some attention is also paid to peaches, pears, and the smaller fruits. The apple does especially well, and there is a vast area in the State of Oregon adapted to its cultivation. The prune also does well, the favorite variety heretofore having been the Italian; but as in many sections it has proved an unreliable bearer, the Petit d'Agen is rapidly supplanting it in public favor.

All fruit cured in Oregon is dried by artificial means, and it is necessary to have large and expensive evaporators in order to prepare the prunes and other fruit for the market. This is due to the uncertainties of the drying season, during which time rains are liable to occur and foggy and cloudy weather is prevalent. In this respect, California has a great advantage over her sister State, as we can cure our fruit at much less cost than is possible there. Otherwise, Oregon might become a very serious competitor with California in prune production.

In many parts of the State experiments are now being made with walnuts, which in some sections appear to do well, but in others have been so far a very unreliable crop. It is probable that the experiments now being carried on in the districts in which the walnuts prove profitable will be continued, and we may have to face Oregon as a competitor in this branch of horticulture.

With a view to ascertaining the quality of nursery stock shipped into our State from Oregon, I have visited the principal nurseries of that State, the greater part of which are located near the city of Salem. From a cursory view, I find the stock grown there is generally in good condition, making a thrifty growth and appearing to be free from insect pests or diseases. A great deal of care is exercised on the part of nurserymen in the selection and cultivation of their stock, and so far as that grown in Oregon is concerned, we have little to fear in the way of introduction of new insect pests from this source. The only one which promises to be at all serious is the Eastern peach-root borer (*Sannina exitiosa*), which has been introduced on Eastern stock and may possibly be found on peach, plum, cherry, and other stock grafted on plum or peach roots. The principal nursery stock grown is apple, cherry, pear, and plum. Very little peach stock is raised, the larger part of the peach stock introduced into California from Oregon, as nearly as I have ascertained, being imported Eastern stock.

The State of Oregon has a Board of Horticulture, organized somewhat on the plan of the late State Board of Horticulture of California. It consists of six members, one of whom represents the State at large, and the others represent each of five horticultural districts into which the State is divided. The board has authority to establish quarantine rules and regulations for the purpose of excluding outside pests or diseases, and as the State is a very large one, the districts are necessarily large and the quarantine is lax. It is therefore possible to bring a great deal of Eastern stock into the State without its passing a proper examination. It is in this direction that danger lies, for it is possible for unscrupulous nurserymen or tree agents to bring stock from infested Eastern districts through Oregon into California and introduce it as Oregon-grown stock. There is, of course, no danger of this being done by reliable nurserymen, but the danger still exists that irresponsible tree agents might be guilty of this act. The peach industry of California is a very important branch of our horticultural interests, and we have carefully guarded against the importation of stock from Eastern districts in which the "peach yellows," "peach rosette," and "little peaches" are prevalent. As there is nothing to indicate the presence of any of these diseases on nursery stock, it has been found absolutely necessary to prohibit the importation of stock from sections in which these diseases exist. If reckless or unscrupulous agents procured stock from such sections, passed it through the State of Oregon, and introduced it into California as Oregon-grown stock, the danger is obvious, and measures should be taken to prevent its entering into our State.

In my interviews with Oregon nurserymen, I found that they are very reasonable and willing to submit to any rules and regulations that may be established in California so long as they are based upon justice, but an idea exists in the minds of some that our laws were framed to bar out outside nurserymen in the interests of California nurserymen. This idea I effaced to the best of my ability, and then found the nurserymen willing to admit the justice of our precautions and inclined to submit to our rules without further protest. I urged upon them the fact that our laws were not passed for the punishment of any class of men, nor to prevent them from doing business with us, but wholly for our own protection; and while our laws and regulations would not bear heavily upon those who were willing to do right by us, they were absolutely necessary to prevent irresponsible parties from introducing serious diseases into our fruit sections.

I also found an objection on the part of some of the nurserymen to the manner in which our laws are enforced. Some of our commissioners are lax in their methods and pass stock after a mere cursory examination, while others are more stringent and examine all stock thoroughly before it is allowed to pass. This difference in the action of our inspectors gives some cause for complaint, and leaves the impression that some shippers are being persecuted by the zealous work of our more efficient officers. The laxity of inspection on the part of others also gives opportunity for the passage of stock without proper examination.

At the time of the coming Fruit-Growers' Convention, the Horticultural Commissioners of the State of California will hold their annual meeting, and I would suggest that on that occasion the subject of a uniform and systematic method of examining all imported stock be considered. The adoption of such a method of examining imported nursery stock would give our State additional security, and would at the same time remove the objection of shippers that they were not being fairly dealt with in some of the counties, while others were lax in their treatment. I would also recommend that importers of stock from districts outside of the State, especially such stock as is liable to be infected with contagious diseases of orchard trees, shall be required to make a statement as to where such trees were grown. Such statement might be accompanied by an affidavit, if necessary. This would remove the danger to be apprehended from irresponsible importers introducing, through a neighboring State, trees from infected districts in the East, and would give us an additional safeguard against the introduction of such diseases. As these rules would bear equally upon all importers, they would remove the objection made by some that they are being persecuted and are discriminated against for the benefit of our local nurserymen.

I have also heard complaints from nurserymen in our own State of the inequality of the rules established in different counties relative to the inspection and quarantining of nursery stock, and these complaints are as well founded as those made by outside nurserymen. It is therefore incumbent, for the benefit of our fruit-growers as well as with a view to administering justice to both our local nurserymen and shippers of nursery stock, that our Horticultural Commissioners should establish some uniform system of quarantine and inspection.

Respectfully submitted.

JOHN ISAAC.

REPORTS OF DEPUTY COMMISSIONER OF HORTICULTURE.

San Francisco, Cal., January 29, 1904.

To Hon. Ellwood Cooper, *State Commissioner of Horticulture, Sacramento, Cal.:*

Dear Sir: I herewith present a synopsis of my report from and including May 2, 1903, to December 31, 1903.

During the above period we found plants or fruit upon 128 steamships and sailing vessels from foreign countries, including our island possessions. The importations consisted of 290 cases of trees and plants, and 173 loose lots in the possession of passengers or crew. These latter would consist of from one to ten plants in each lot. Forty-seven cases of trees and plants arrived in San Francisco via Eastern ports from Europe. As a rule, plants from Europe are freer from insect pests and disease than those from Japan, China, the South Sea Islands, or Mexican ports.

Imports of fruit consisted of 13,222 cases, principally semi-tropic fruits, not including bananas. No oranges or sweet limes are, as usual, permitted to enter from Mexico, on account of the "Mexican orange-maggot," and all such fruit from that country found in the possession of passengers on incoming vessels is promptly destroyed. It is usually in the fall months that we find Mexican oranges containing maggots; but on August 12th, the steamship "City of Panama" arrived from Panama via Mexican ports, and we found oranges containing well-developed maggots. On November 19th, Mr. Michael C. Diebold, secretary of the Mexican Consul at San Francisco, called in regard to the refusal of the Southern Pacific Company to accept two carloads of Mexican oranges for California. Mr. Diebold was requested by his government to ascertain under what law we prohibited the entry of such fruit from Mexico. I gave him copies of our bulletin, "Horticultural Statutes of California," and called his attention to Section 4 of our Horticultural Quarantine Law, on page 14. This law, as you are aware, was materially strengthened by the amendment passed by the Legislature last session, which was immediately signed by Governor Pardee.

Mr. Wm. Sproule, General Freight Traffic Manager of the Southern Pacific Company, informed me that they will not give rates upon oranges from Mexico for points in California.

We captured another mongoose; this time from India, via Newcastle, N. S. W., on the ship "St. Francis." We made short work of it with hydrocyanic acid gas.

We are still receiving good reports of the wonderful work of the black scale internal parasite, *Scutellista cyanea*. In the Los Angeles Times of January 3, 1904, Mr. J. W. Jeffrey, Horticultural Commissioner, has the following:

> *Prolific Insects.*—An idea may be formed of the prolific nature of the *Scutellista* from the fact that as many as five hundred full-grown flies are found in one breeding jar of a morning, in the office of the Horticultural Commission of Los Angeles County. I estimate that from 30,000 to 35,000 flies have been distributed throughout the county since the 15th day of last August. This army of insect friends is busy every day, and we have hopes that it will finally extirpate the most destructive scale enemy the farmers have to contend against. I have seen an orchard within the week that seems to have hundreds of thousands of *Scutellista* busily engaged in absorbing the juice of the eggs of the scale. The orchard was not colonized, but the insects came from a distance and have gone through another grove still more remote from the nearest artificial colony.

When we consider that the first colony of this valuable South African insect was sent from this office to Los Angeles on June 9, 1902, and the amount of work it has accomplished in eighteen months, it would seem to indicate that we have at last secured the true enemy of that troublesome pest, the black scale (*Lecanium oleæ*). It is but twenty-four months since we commenced the propagation of *Scutellista cyanea* from three females received from Prof. Charles P. Lounsbury of Cape Town, and in this short time extensive orchards in Los Angeles, Orange, San Diego, and other counties, have been freed from black scale. For the past four months we have been badly hampered in their indoor propagation by our inability to secure suitable trees infested with scale.

From the great variety of fruit and other trees attacked by the black scale, the damage done such trees, and the cost of annually spraying or fumigating to keep the pest partly under control, I believe that one million dollars will be a reasonable estimate of the value of this parasite to California.

This is another instance of the wisdom of California's policy of introducing and fostering beneficial insects. My paper, read before the State fruit-growers at the Fresno convention, December 8 to 11, 1903, gave an extended account of beneficial insects, and what they have done for the horticulturists of California.

Under your instructions I have visited San Diego, Orange, Riverside, San Bernardino, Los Angeles, Ventura, Santa Barbara, Alameda, Santa Clara, Fresno, Sutter, Butte, Yolo, and Mendocino counties, and made special reports to you.

Respectfully submitted.

ALEXANDER CRAW,
Deputy Commissioner of Horticulture.

SAN FRANCISCO, CAL., December 30, 1904.

To HON. ELLWOOD COOPER, *State Commissioner of Horticulture:*

DEAR SIR: I herewith hand you a synopsis of the work of the Quarantine Division, covering the period which extends from January 1, 1904, to July 1, 1904.

During this time plants, trees, and fruit have been found upon one hundred and ten steamers and sailing vessels from foreign countries and from the Hawaiian and Philippine Islands. The receipts consisted of 7,815 cases, boxes, and crates of miscellaneous fruit, exclusive of bananas and vegetables. There were 281 cases and 205 loose lots of plants, the latter in the possession of passengers and crews. Thirty-five cases of plants have arrived from Europe by rail. All the above were carefully examined, and when found even slightly infested with insects or diseases not already existing in the State, they were destroyed, and in other cases were fumigated with hydrocyanic acid gas before they were permitted to pass.

We occasionally find oranges and sweet limes from the maggot-infested districts of Mexico in the baggage of passengers from that country, but no shipments have arrived among the freight, as shippers have learned by past experience that all such will be immediately seized and destroyed upon arrival. However, during the time covered by this report, twenty-four lots of these oranges have been seized from passengers, and burned. The employés of vessels plying between San Francisco and Mexican ports rarely attempt to bring oranges, as they have come to have a strong regard for our horticultural laws.

On January 16th there arrived at this port in the cargo of the "America Maru," from Japan, a shipment of fifty flowering peach trees, which upon examination were found to be infested with *Aulacaspis* (*Diaspis*) *pentagona.* They were immediately seized and the entire shipment, box and all, was burned. This is a very serious pest and one that is not permitted to land under any circumstances.

On February 14th, the "China" arrived from Hong Kong and Chinese and Japanese ports and we found in the possession of passengers ten hand plants (sago palm, dwarf peach, azaleas, and flowering plum), all of which were infested with serious pests and the entire lot was seized and destroyed. This one instance illustrates the danger to be apprehended from the introduction of plants from foreign countries, without proper inspection.

On March 19th, the "Nevadan," from Honolulu, arrived with a shipment of twelve cases of pineapples infested with *Pseudococcus citri* and *Diaspis bromeliæ.* This shipment arrived in bad condition and, upon being notified that the fruit would have to be fumigated, the importers refused to accept it, so the entire shipment was destroyed.

On May 27th, the "Siberia," from Japan, arrived with a package of bamboo plants marked "P. T. E.," which, upon examination, were found to be infested with *Antonina crawi*, a species of fungus and a Chinese borer. The infested plants were immediately destroyed.

On June 6th the steamer "Ventura" arrived from Australia, and among the passengers was a lady who had in her possession a lot of plants consisting of camellias, Kentia palms, daphnes, and a small fern. The entire lot was found to be infested and was dropped over the side of the wharf, together with the pots and earth.

The most prevalent scale we meet with is the *Diaspis pentagona* and, as it is a very serious pest, it is never permitted to land. Judging from the number of infested plants that arrive and the great diversity of its food plants, it certainly must be very plentiful throughout China and Japan and would cause us no end of trouble and expense, were it to gain a foothold in this State. By experimenting upon it we find that any of our sprays, even when applied five or six times the usual strength, fail to kill the eggs, and the only remedy would be a very heavy dose of hydrocyanic acid gas in such strength that it would be dangerous to apply it to many of our trees or plants, consequently we never permit a single specimen to land, but destroy the plants upon which it is found.

The plants, etc., brought from Europe seem to be much cleaner than those from the Orient; while those from Mexico are usually found to be so badly infested that few are permitted to land. The most prevalent pest in the scale family from Mexico is *Chrysomphalus* (*Aspidiotus*) *biformis*, mostly on cocoanut palms, which are promptly destroyed.

From Australia we find plants infested with *Chionaspis citri*, *Ceroplastes rusci*, *Eriococcus araucaria*, *Parlatoria*, and species of *Aspidiotus*.

From Mexico come *Parlatoria*, *Ceroplastes*, *Asterolecanium*, and many species of *Aspidiotus*.

From Germany, *Aspidiotus*, *Chionaspis*, and *Lecaniums*.

From China and Japan we find the largest variety of pests. On biotas, tortrix moths that feed on the foliage; dwarf pines with "basket worms" (*Thyridopteryx*); borers in bamboo; *Diaspis pentagona*, the white circular scale that infests many deciduous trees and a large variety of ornamental plants; many species of aphids, apple moth, *Aspidiotus*, *Parlatoria*, *Lecaniums*, *Pseudococcus*, *Leucaspis*, *Chionaspis*, and *Diaspis*, also black aleyrodes. In fact, it is somewhat unusual to find a shipment of plants from these countries in which we do not discover many that are infested, and as a general precaution we fumigate all cases that arrive before they are inspected, to prevent the escape of anything during the necessary handling.

The presence of fruit flies (family *Trypetidæ*) in many countries, and the recent discovery of several new species, have caused us to pay special attention to this class of fruit-destroyers, and absolutely no fruit from countries where this terrible pest is known to exist is permitted to land and no time is lost in destroying all such, as this pest is a hundred times more to be dreaded than any of the other forms of injurious insects. Both the male and the female of this species are provided with wings, and we know of no artificial means that can be used against them with any success; even inclosing the trees in a tent made from netting proves but a slight barrier against their onslaught. At this port every precaution has been taken to keep them out, but it will require the closest attention and most drastic measures if we are to remain free from their attacks.

With the great increase in ocean traffic in general, the work of this division is increasing so rapidly that our limited force has all it can possibly do to keep abreast thereof, and we can not devote as much time to this branch of the work as it really demands.

The work of propagating and distributing beneficial insects, which is conducted in connection with the regular quarantine work, has taxed this division to its utmost in order to supply the applications that have been received for colonies of parasites and insect enemies of the various pests now existing within the State. The wonderful work in the orchards of this State of the *Scutellista cyanea*, the South African internal parasite of the black scale (*Saissetia oleæ*), has surpassed our most sanguine expectations. With only three female flies for a start to stock the entire State, the great results that have been accomplished in two years are almost beyond belief. The most flattering reports have been received from nearly every section of the State where these insects have been liberated, some stating that they had accomplished more than was expected from them. The greatest difficulty experienced has been in the matter of procuring suitable material for the work of propagation, which is carried on in our office. Our propagating room is quite small, and much of the space has to be used for the propagation of the many other species we keep constantly on hand. Another source of trouble we have to contend with is the matter of food for the parasites, as they are voracious feeders. Each species requires a different food, and many of these food pests have become so scarce that it is with great difficulty we can procure sufficient material to carry on the work of propagation; on many occasions it became necessary to go quite a distance into the country to even get a small supply of food. Our limited space will not permit us to propagate our own food plants. Were this possible, we could facilitate matters materially, as most of our time is required along the water front in the inspection of the steamers that arrive from foreign ports.

A year ago the value of the *Scutellista cyanea* to the citrus industry alone was placed at $1,000,000. Then this insect was not one quarter as well established as at the present writing. What its value is to-day can only be guessed at, as its work is second only to that of the *Vedalia cardinalis*, the Australian enemy of the cottony cushion scale.

Colonies of beneficial insects have been sent, by special request, to Italy, Cuba, Mexico, West Indies, England, and West Australia; and in the United States, to Louisiana, Colorado, and Illinois. The following table will give a good idea of the volume of beneficial and parasitic insects which have been sent out from the office during the last fiscal year:

Variety	No. of Colonies.	Average in Each Colony.	Total Insects.
Scutellista cyanea	680	20	13,600
Comys fusca	430	45	18,550
Vedalia cardinalis	182	15	2,730
Rhizobius ventralis	21	25	525
Novius koebelei	14	15	210
Cryptolæmus montrouzieri	16	15	240
Miscellaneous parasites	25	20	500
	1,368		36,355

All the above work has caused our correspondence to largely increase, especially since the good work of the *Scutellista cyanea* became known. Coupled with this is the general correspondence pertaining to quarantine work and horticultural and entomological subjects.

In regard to the quarantine work proper, the following table will show the work of this department during the last fiscal year as compared with the work done in the fiscal year 1902–03. According to a report of the commercial organizations of San Francisco, the volume of business in 1903–04 as compared with 1902–03 shows an increase of nearly one million tons in the merchandise which passed over the wharves on the water front, including large shipments of fruit and nursery stock. This also shows a material increase in the line in which this department is so vitally interested.

Year ending June 30.	Vessels Inspected.	Cases of Plants.	Loose Lots of Plants.	Packages of Fruits.
1903	119	161	125	8,825
1904	220	615	366	19,889
Increase	101	454	241	11,064

Respectfully submitted.

EDW. M. EHRHORN,
Deputy Commissioner.

CORRESPONDENCE

ON THE

MEXICAN ORANGE-MAGGOT.

THE MORELOS ORANGE-MAGGOT.

The discovery of the Morelos orange-maggot (*Trypeta ludens*) in several small shipments of Mexican oranges arriving in San Francisco, and the information received to the effect that this pest is spreading into all the orange sections of our sister republic, led to the establishment of a strict quarantine against Mexican oranges. In view of the great importance of the citrus industry in our State, involving thousands of acres in orchards, and an investment of millions of dollars, this quarantine was an absolute necessity. We are now producing from 25,000 to 35,000 carloads of citrus fruits annually, and the orange-maggot is unknown in our State. Should it once obtain a foothold here, our greatest and most profitable horticultural industry would be ruined. It is in the interest of our State and for the protection of our orange-growers that this embargo against Mexican oranges and sweet limes has been laid. In this beneficent work we have been willingly and effectively aided by the Southern Pacific Railroad Company, which refuses to bring such fruit into our State over its lines. Many of the Mexican growers misunderstand our motives in this matter, and assume to believe that it is an attempt on our part to prevent Mexican fruit from being sold in our market. This misapprehension has led to a voluminous correspondence between the Mexican Government and our State Department and between the latter and the Executive Department of California. Following is such correspondence:

[Copy.]

San Francisco, November 19, 1903.

Wm. Sproule, Esq.,
Gen'l Freight and Traffic Mgr., S. P. Co., San Francisco, Calif.:

Dear Sir: The Secretary of the Consulate General of Mexico, Mr. Michael C. Diebold, called to-day in relation to the importation of Mexican oranges and the refusal of the S. P. Co. to accept two cars of oranges from Mexico for California.

We gave him copies of the State horticultural law, and pointed out the danger of importing oranges from that country and the effect it would have on the production and transportation of one of the principal products of our State.

Thanking your company, on behalf of the orange-growers of California, for the protection extended to their industry, I am,

Yours very truly,

(Signed:) ELLWOOD COOPER,
Commissioner.
Per C.

[Copy.]

Subject: Exclusion of Mexican Oranges from California.

OFFICE SOUTHERN PACIFIC COMPANY, November 20, 1903.

MR. ELLWOOD COOPER,
State Commissioner of Horticulture, Ferry Building, San Francisco:

DEAR SIR: I thank you for your favor of the 19th inst.

As a matter of transportation we would like to carry Mexican oranges to California, but our greater interest is in maintenance of the standard of the California orange, and we are not willing to let any immediate profit count as against the safety of the California orange orchards.

We have pointed out to the railroad officials in Mexico that if Mexican oranges reach the California boundary line they are very apt to be either turned back or destroyed under the California horticultural laws, and have cautioned our people to like effect for the purpose of preventing disaster to the Mexican orange shipper and difficulties for the California authorities.

Are we correct in this position as to the action of the State authorities with respect to such oranges reaching the State boundary? What would you do if we brought them?

Yours truly,

(Signed:) WM. SPROULE.

[Copy.]

SAN FRANCISCO, November 23, 1903.

WM. SPROULE, ESQ.,
General Freight Traffic Mgr. S. P. Co., City:

DEAR MR. SPROULE: Your favor of the 20th inst. (179-3) to hand. The reason for the enactment of the law excluding Mexican oranges from California is because the oranges of that country are infested with a very destructive pest, known as the "Mexican orange-maggot" (*Trypeta ludens*). This insect is supposed to be indigenous to the State of Morelos, Mexico. Upon the advent of the railroads into that country, and quick transportation, the maggots of this pest have been carried all over Mexico, until to-day possibly only the orange groves of Lower California are free from it.

Should such a pest be introduced into this State the consumption of our oranges would decrease and the profit in growing, handling, and the transportation of same would be practically destroyed.

In reply to your question, "What would you do if we brought them?" As this pest is not found in California, we would be governed by Section 4 of our Horticultural Quarantine Laws, a marked copy of which we send you under separate cover. Thanking you for your prompt attention, I am,

Respectfully yours,

(Signed:) ELLWOOD COOPER.
Per C.

DEPARTMENT OF STATE, WASHINGTON, February 4, 1904.

His Excellency the Governor of California, Sacramento, California:

SIR: I have the honor to inclose herewith, for your consideration, a copy of a note from the Mexican Ambassador, calling attention to the measures taken by the authorities of the State of California to prevent the entrance into this country of the caterpillar, so called, known as the "Morelos," and requesting, in view of the injury to the business of exporting oranges from Mexico, that the restriction placed on such business in consequence of said measures, be removed.

I have the honor to be, sir,

Your obedient servant,

(Signed:) J. B. LOOMIS,
Acting Secretary.

Enclosures: From Mexican Ambassador, No. 499, January 21, 1904, with two enclosures.

[Translation.]

No. 499.

EMBASSY OF MEXICO, TO THE UNITED STATES OF AMERICA,
WASHINGTON, January 21, 1904.

MOST EXCELLENT SIR: I have the honor to forward to you, by special direction of my Government, the enclosed copy of a note that has been just addressed to me by the Department of Foreign Relations of Mexico, together with a copy, also enclosed, of a dispatch of the Consul of the Republic of San Diego to the same department, from which you will please notice the difficulties opposed by the authorities to the importation of Mexican oranges.

I trust that the Government of the United States, which is so decidedly favorable to the furtherance of the friendly and cordial relations that are daily growing broader and closer between Mexico and the United States, will receive as well founded the complaint of the Mexican growers and endeavor to remove, if practicable, the present restrictions that are so detrimental to Mexican fruit exporters.

Accept, Excellency, etc ,

M. DE AZPIROZ.

Enclosure: as above.

[Translation.]

OFFICE OF THE
SECRETARY OF STATE AND OF THE DEPARTMENT OF FOREIGN RELATIONS,
MEXICO, January 9, 1904.

The office of the Secretary of the Treasury officially writes me the following note, No. 6545 and date of December 28, last:

"Your postal note No. 1592 of the 2d instant, with which you are pleased to quote the report submitted by the Consul-General of Mexico in San Francisco, California, in regard to measures enforced in said State, for reasons therein stated, to forbid the introduction of Mexican oranges into said State, has been received.

"In reply I have the honor to say that, as shown in the report here referred to, the measures in question seem to tend rather to prohibit the importation of Mexican oranges than to avert the propagation of the pest mentioned, and are no doubt dictated by the competition the Mexican orange is apt to set up with the California fruit, owing to the former being earlier than the latter, and probably of a higher grade; these measures, therefore, do not appear to be warranted, and this Department is of the opinion that, in order to bring an end to this condition of things, which works injury to orange-growers of this country, it would be very advisable to take up the matter diplomatically with the Government of the United States, and to authorize and suitably instruct our Ambassador at Washington to that effect."

I transcribe the foregoing to you for proper action with reference to the report submitted by the Consul-General of Mexico, at San Francisco, on the 24th day of November last, and no doubt communicated to you by the said officer, and I append a copy of the dispatch written to this Department on the subject by the Consul at San Diego, California, under date of the 29th of October of last year.

I renew to you my distinguished consideration.

(Signed:) MARISCAL.

The Ambassador of Mexico,
Washington.

[Translation.]

No. 39. Prohibition of Mexican oranges and lemons.

OFFICE OF THE SECRETARY OF STATE, AND OF THE DEPARTMENT OF FOREIGN RELATIONS,
CONSULATE OF THE MEXICAN UNITED STATES AT SAN DIEGO, CALIFORNIA.
SAN DIEGO, CALIFORNIA, October 29, 1903.

The "San Diego Union," of this date, publishes the text of a letter sent to the Collector of Maritime Customs by the Commissioner of Horticulture of this State, in which he positively orders him not to allow, except under certain conditions, the landing of

oranges and lemons from Mexican ports, which fruit he declares to be generally infested with a caterpillar known as the "Morelos."

I have ascertained at the custom house of this port that these instructions exist and that they are disposed to carry them out if the occasion arises.

Although fruit rarely comes to this port from San José del arbo, I hasten to bring the matter to your high knowledge for such action as may be expedient; in my opinion these precautionary measures and the quarantines declared against Mexico cattle are nothing more than schemes of the monopolists of this country to keep out of the American markets foreign goods likely to compete with theirs in respect to prices.

I have the honor to forward herewith the clipping of the "Union" above referred to, with a translation.

I renew to you the assurances of my most respectful consideration.

(Signed:) A. V. LOMELI.

The Undersecretary in charge of the Department of Foreign Relations, Mexico, D. F.

A true copy: Mexico, Jan. 9, 1904. José Algara, Undersecretary.

[Copy.]

No. 442.

Department of State, Washington, February 5, 1904.

Excellency: I have the honor to acknowledge the receipt of your note No. 499, of the 21st ultimo, calling attention to the measures taken by the authorities of the State of California to prevent the entrance into this country of the caterpillar, so called, known as the "Morelos," and requesting, in view of the injury to the business of exporting oranges from Mexico, that the restrictions placed on such business in consequence of said measures, be removed.

In reply, I have the honor to inform you that copies of your note and of its inclosures were sent to the Secretary of Agriculture for his consideration and appropriate action In a letter dated the 2d instant, the Secretary of Agriculture says:

"The Morelos orange fruit worm is a maggot which seems to be rather generally distributed throughout Mexico. It is a dangerous enemy to oranges, attacking the fruit. The fly lays her eggs upon the green fruit and the resulting maggots burrow through the pulp and eventually cause the rotting and destruction of the orange. This insect has not as yet obtained a foothold in the United States The yearly importation of Mexican oranges into southern California, however, constitutes a constant source of danger"; and he adds that there seems to be nothing that the Department of Agriculture can do in the premises; that the Federal Government has no quarantine regulations against this insect; that the matter is one for the authorities of the State of California to deal with; and that the constitutionality of the California State law on the subject has been upheld by the courts.

In consequence of the views thus expressed by the Secretary of Agriculture, copies of your note and of its enclosures have been this day sent to the Governor of California for his consideration.

Accept, Excellency, the renewed assurance of my highest consideration.

FRANCIS B. LOOMIS, Acting Secretary.

To His Excellency, Señor Don Manuel de Azpiroz, etc.

Executive Department, State of California,
February 11, 1904.

Hon. Ellwood Cooper, *Santa Barbara, Cal.:*

Dear Sir: I send herewith a letter from the Acting Secretary of State at Washington and also a copy of a note from the Mexican Ambassador, accompanying which latter is a communication from the Mexican Consul at San Diego. The subject-matter is one in which I know that you are interested, and I would be glad to have you report to me regarding the action taken by your department, and to have you give the reasons for the same, in order that I may reply to the complaint made by the Mexican authorities.

Very truly yours,

(Signed:) GEO. C. PARDEE, Governor.

SANTA BARBARA, February 16, 1904.

To His Excellency, DR. GEORGE C. PARDEE, *Governor of California:*

SIR: I received your letter of the 11th, transmitting to my department certain communications concerning the quarantine regulations practiced in this State.

First—A letter issued by the Mexican Consulate at San Diego, addressed to the Secretary of State of the Republic of Mexico, dated October 29, 1903.

Second—A letter from the Department of State, Mexico, dated January 9th, to the Ambassador at Washington.

Third—A letter from the Mexican Embassy to the Honorable Secretary of State of the United States, dated January 21st.

Fourth—A letter from the Department of State, addressed to your Excellency, dated February 4th.

All of the communications have had my careful consideration.

In answer to the first communication I will state that I had instructed the Collector of the Port at San Diego, as also the county horticultural officer, not to permit the landing of oranges or sweet limes from Mexico at that port, on account of the danger of introducing what is known as the "Morelos orange-maggot" (*Trypeta ludens*), or if landed to destroy. The statement as to lemons is a mistake. The "Morelos orange-fly" has not been known to attack either the lemon or lime. Similar orders have been given to the custom officers at the port of San Francisco.

Mexican oranges or sweet limes can not be landed and sold in the San Francisco market.

Deciduous fruits from Australia are prohibited on account of the danger of introducing the Australian fruit-fly. All melons of every kind from the Hawaiian Islands are also prohibited on account of the melon-maggot.

As to the ravages of the Australian fruit-fly and melon-maggot we have advised our sister states, Oregon and Washington, to pursue the same course.

Regarding the quarantine of Mexican cattle, this does not come within the province of my department.

These fruit-flies are beyond any question the most serious fruit pests known up to the present time.

I beg to call your attention to Section 3 of the amended Act passed by the Legislature February 16, 1903. I herewith attach a printed copy of said Act.

There is no way known by which the "Morelos orange-maggot" can be disinfected. The larva enters the fruit, through the rind, into the pulp by a hole not much larger than would be made by a common sewing-needle. Sometimes this hole is completely closed up after the entrance of the larva, so that an observer could not detect the opening.

The larva lives on the pulp, and grows to mature size. The orange collapses and falls to the ground. Then the larva seeks a hiding place and goes into the chrysalis state, and from this is hatched the perfect insect to continue the terrible work.

I have examined numerous fruits, and have found maggots where no entrance could be detected; hence the impossibility of any examination to protect our orchards, save that of cutting open every individual fruit.

We have had reports from several of the coast ports in Mexico, also from cities of the interior, and from personal knowledge feel that it would not be safe to allow any oranges or sweet limes from that country to go into consumption in California.

The fears of our orange-growers are well stated in a copy of a letter, also attached. This letter reflects the sentiment of all our orange-growers. We have frequent communications of this character.

To openly permit the introduction of the "Morelos orange-fly" might cost millions to our orange-growers, while it could not benefit the industry in Mexico.

California offers nothing as a market for this fruit, as with our numerous varieties and local differences in climate we have ripe oranges every month in the year.

No neighbor could wish to introduce into a friendly state an enemy so destructive, and especially one for which there is no known remedy.

I have heretofore on several occasions warned our people against this danger, and appealed to the Legislature for funds to investigate this orange pest. It is my purpose, when funds are furnished, to send a competent investigator to study, and secure a remedy; therefore I shall strive to encourage the most friendly relations with Mexico and will ask that government to give every assistance possible in the investigation.

From the tenor of the correspondence it is inferred that our rigid quarantine is rather to prevent competition than to avoid a dangerous pest. We shipped last year out of the State 25,000 carloads of citrus fruits. The production is increasing so that the only competition that can affect us is what we have to meet in the Eastern markets.

I am satisfied that these honorable gentlemen of our sister republic have been misinformed, or that they have no conception of the grave danger of the spread of this pest, otherwise such a motive would not have been charged.

I have the honor to be
Your obedient servant,
ELLWOOD COOPER,
Commissioner of Horticulture.

EXECUTIVE DEPARTMENT, STATE OF CALIFORNIA,
February 25, 1904.

SIR: I have the honor to submit herewith a copy of a communication received from Hon. Ellwood Cooper, State Commissioner of Horticulture, with reference to the complaint made by the Mexican Ambassador in his note of January 21, 1904, concerning the policy of the State of California in excluding Mexican citrus fruits.

I desire to say that, to the best of my knowledge and belief, the statements made by the Horticultural Commissioner respecting the danger to be apprehended from a free introduction of Mexican oranges are true, and not exaggerated. It is the belief of all orange-growers in California that the so-called Mexican orange-maggot is one of the most destructive insect pests ever known, and that, should it gain lodgment in our orange orchards, an industry which amounts to millions annually would be seriously injured, if not entirely destroyed.

I am, sir,
Your obedient servant,
GEO. C. PARDEE,
Governor of California.

The Secretary of State,
Washington, D. C.

MARCH 3, 1904.

SIR: I have the honor to submit herewith copies of certain correspondence between the State Horticultural Commissioner, Hon. Ellwood Cooper, and the General Freight Traffic Manager of the Southern Pacific Company, relative to the importation of Mexican oranges into California. I beg to request that you will submit this correspondence to the Mexican Ambassador, and ask that the same be considered in connection with the report by Mr. Cooper on the same subject, which was recently forwarded to you.

I have the honor to be, sir,
Your obedient servant,
GEO. C. PARDEE,
Governor of California.

The Secretary of State,
Washington, D. C.

Enclosures: 4.

DEPARTMENT OF STATE, WASHINGTON, March 10, 1904.

The Honorable, Governor of California:

SIR: I have the honor to acknowledge the receipt of your letters of the 25th ultimo and the 3d instant, showing the reasons for the policy of the State of California in excluding Mexican citrus fruits.

In reply, I have the honor to inform you that copies of your letters and of their enclosures have been sent to the Mexican Ambassador for the information of his Government.

Thanking you for the full and prompt information communicated with your letters.

I have the honor to be, sir,

Your obedient servant,

(Signed:) JOHN HAY.

DEPARTMENT OF STATE, WASHINGTON, September 6, 1904.

His Excellency, the Governor of California, Sacramento:

SIR: Referring to your letters of February 5th and March 3d last, I have the honor to enclose herewith for your consideration a copy of a note from the Mexican Ambassador, conveying an invitation from his Government to the authorities of California to send a commissioner who, jointly with one appointed by that Government, will visit the orchards in the State of Sonora and investigate the pest that attacks the orange and sweet lime.

I have the honor to be, sir,

Your obedient servant,

ALVEY A. ADEE,
Acting Secretary.

Enclosure: From Mexican Ambassador, No. 25, Aug. 23, 1904.

[Translation. No. 25.]

EMBASSY OF MEXICO, TO THE UNITED STATES OF AMERICA,
ALLENHURST, N. J., August 23, 1904.

Honorable Mr. Assistant Secretary:

Your department, in its note No. 450 of the 10th of March last, sent me copies of various communications setting forth the grounds on which the authorities of Texas (California) prevent the importation of oranges and sweet limes from Mexico into that State.

This correspondence was forwarded to me by my Government and, after earnest consideration, was made the subject of an opinion of the Ministry of Fomento, which has been communicated to me by the Department of Foreign Relations and is to the effect that an invitation be extended to the authorities of California to send a Commissioner who, jointly with one appointed by my Government, will visit the orchards in the State of Sonora, and investigate the pest that attacks the above-mentioned fruits in the parts of my country where it exists, in accordance with the proposition made by Mr. Ellwood Cooper, Commissioner of Horticulture, to the Governor of California in his official letter of the 16th of February of this year, which formed part, and a very important part, of the correspondence above referred to.

My Government, looking upon Mr. Ellwood Cooper's motion as one that affords an easily executed expedient whose object would be of great importance to the growers of citric fruits in both countries, has approved the opinion of the Ministry of Fomento and has directed me to ask that the Government of Texas (California) be advised through your department that my Government invites it to send a commissioner as above indicated to the end of seeking a remedy against the orange pest which Mr. Ellwood Cooper proposes to find, with the co-operation of the Mexican Government.

I have the honor to communicate the foregoing to you with the request that you make it known to the Governor of California to the desired ends.

I reiterate, etc.,

M. DE ASPIROZ.

SACRAMENTO, CAL., October 17, 1904.

To His Excellency, DR. GEORGE C. PARDEE, *Governor of California:*

DEAR SIR: I have before me the correspondence you have submitted concerning the investigation of the orange fruit-fly (*Trypeta ludens*), commonly known as the Morelos orange-maggot.

The letter from the Department of State dated September 6, 1904, addressed to your Excellency, enclosing translation No. 25, Embassy of Mexico to the Department of State, Washington, dated August 23, 1904.

This letter from the Embassy extends an invitation to California to send a commissioner to join a representative from the Mexican government to investigate the insect pest as above mentioned, looking toward the discovery of a parasite, or other methods that will destroy, and keep in check, this serious enemy to the orange and the sweet lime. This correspondence is in the line of a suggestion made by me in a former correspondence regarding the ravages of this terrible pest.

I see no reason why such an expedition should not be consummated. It will give me great pleasure to do anything that is within my power to relieve our sister republic from the destructive enemy, and it may be of equal importance to the orange industry of our own State.

Therefore, if it is agreeable to the views of your Excellency and within the scope of the law creating the Horticultural Commission, I will arrange to have a competent expert to go on this mission about the end of February next. The proper time to make the investigation will be the date above mentioned, as the fly does not begin the deposit of eggs until the oranges are well colored.

I will also state that it is not only the province of Sonora, but many parts of Mexico that will have to be visited, as the pest is known to be generally distributed in other provinces.

Have the goodness to request the appointment of a commissioner by the Mexican government, and that I be informed, so that I can communicate the time and place where the commissioners shall meet.

I have the honor to be,
Your obedient servant,
ELLWOOD COOPER,
Commissioner of Horticulture.

EXECUTIVE DEPARTMENT, SACRAMENTO, October 26, 1904.

SIR: I have the honor to report that, after receiving your communication of September 6th, with which was enclosed a copy of a note from the Mexican Ambassador conveying an invitation from his Government to the authorities of California to send a commissioner to the State of Sonora, Mexico, to investigate the orange pest, I communicated with the State Horticultural Commissioner of California, and have now received from that official a letter bearing the date of October 17th, a copy of which is enclosed herewith.

I beg that you will communicate to the Mexican Ambassador the information that the authorities of this State will gladly adopt the suggestion made by the Government of Mexico to have a joint investigation of the orange and lime pest on the lines which have been suggested. The details of this investigation will be arranged by the State Commissioner of Horticulture of California, in co-operation with the Mexican authorities.

I have the honor to be, sir,
Your obedient servant,
GEORGE C. PARDEE,
Governor of California.

The Secretary of State,
Washington, D. C.

Enclosure: 1.

REVIEW OF THE FRUIT SEASONS.

REVIEW OF THE FRUIT SEASONS.

SEASON OF 1903.

The season of 1903, while falling below general expectations in the total quantity of fruit produced and handled, was nevertheless a fairly good one, and shipments of most varieties exceeded those of former years.

The **cherry** crop fell below normal, but was of good quality. Shipments of fresh fruits for the season opened, practically, with a carload from Vacaville on May 9th. Some small shipments had been made prior to that date, but this was the first commercial shipment. The cherry crop of this year ripened gradually, and shipments continued without loss to the end of the season.

Apricots were a fairly good crop, the earlier varieties turning out heavily. The quality, however, was below average, as shot-hole fungus was very prevalent in many of the apricot sections and much of the fruit was badly spotted.

Peaches were a very fair crop. The early varieties were somewhat below the normal output, but the later varieties were a full average crop. As a rule the orchards were in good condition and the fruit of excellent quality. Prices received were generally fair and shipments in excess of former years.

Prunes.—Owing to the lack of rainfall throughout the principal prune sections of the State, it was generally predicted that the prune crop would be a very light one. But while some of the leading prune sections fell below normal in their output, there were sufficient new orchards coming on in other portions of the State to very nearly compensate for this shortage, and the crop was very nearly a normal one. The low prices which have prevailed for this fruit, however, interfered with its sale, and shipments of fresh prunes and plums fell below those of former years. Late plums brought a better price and the shipments were heavier.

Pears were a very good crop, but owing to the pear blight in many of the principal pear sections of the San Joaquin Valley, the crop fell somewhat below the usual output. Shipments were also lighter than usual, but prices were very fair.

The **apple** crop was a good one in all sections of the State. Heavy shipments were made, especially from the Pajaro Valley, and prices as a rule were satisfactory. As persistent spraying was carried on against the codling-moth in this section, the fruit was of better quality and there was a less percentage of wormy apples.

Olives yielded very heavily and a very large pack of both pickled fruit and oil was put up. In the southern counties especially the olive crop was one of the largest ever produced. Prices as a rule were fair to good, and the olive-growers had a successful season.

Grapes of all kinds—wine, raisin, and table—turned out very heavily, and the raisin pack was the largest ever put up in the State. Prices, however, ruled so low that there was very little profit in raisins for the growers, and large quantities of raisin grapes were sent to the wineries. This had the effect of depressing the price of wine grapes which brought the growers much less than was expected. Table grapes were very good and a very profitable crop. Shipments of these were continued late in the season and brought the shippers very good returns.

Nuts.—On the whole, while there was some disappointment, the season of 1903 was an average one for the producers of California. The almond crop was a very good one, but the walnuts were not up to the average. The walnut blight affected large numbers of trees in the principal walnut sections, and large quantities of nuts were either rendered worthless or very greatly reduced in value; and while there was a fairly good output of walnuts, the quality was far below average and prices were seriously affected in consequence.

SEASON OF 1904.

The season of 1904 has been a disappointment. It was expected early in the season that there would be a very large fruit crop, as the trees had set very thickly with fruit buds and blossomed freely; but it was soon observed that the fruit had not set, the blossoms dropped, and very many of the trees were bare. This was especially true of peaches, apricots, plums, and prunes. At the time of the opening of the blossoms the greater part of the State was visited by very heavy rains and severe winds, which destroyed the pollen in the blossoms and prevented fertilization. As a result the greater part of the blossoms were infertile and dropped without forming fruit.

Cherries fell somewhat below normal in quantity, but the crop was spotted and varied in different sections. In Alameda and Santa Clara counties, the principal cherry-producing counties of the State, the crop fell very much below the usual output. In other parts the crop ranged from fair to good; but taking the State at large, it has been a light crop. Shipments were fairly good, and prices received have been better than usual. The quantity used by the canneries has fallen very much below the average year.

Apricots are reported in very much the same condition generally. The crop has been a light one, although in some sections it has turned out well. In Ventura County, where it is a very important crop, it gave fairly good returns, although not coming up to the general quantity. In some sections of southern California, the apricot crop is reported good; but such sections were the exception, and on the whole it has been a light crop. There was an active demand for this fruit at the canneries and good prices were offered.

Pears.—While falling below the usual output, the pear crop of the State has been fairly good, much better than other classes of fruit. In the counties around the bay, pears have been light, but in Sacramento County, where it is one of the principal fruit crops, and in other counties of the Sacramento Valley, pears have turned out fairly well, and the crop on the whole has been a comparatively good one. Pear blight has practically destroyed this crop in the upper San Joaquin Valley, and has gained a foothold in Sacramento County and in the Sacramento Valley. This has somewhat reduced the output for the present year and may seriously interfere with it hereafter. General reports of the pear crop as compared with other fruit crops of the State indicate a very good yield. Prices have been better than usual and the demand good.

Peaches, more than any other fruit, suffered from the very heavy rains during the blossoming season, as they were in full blossom at the time the rain came. This crop has been an exceedingly light one; in fact, we have had the lightest peach crop known since California became a producer of this fruit. In many sections it was a total failure, in most others it was very light, and in few counties was there even a fair crop. Prices have ranged very high, and canneries have paid as high as $60 to $65 per ton for canning purposes.

Prunes have yielded much better than was anticipated early in the season, and they reach very nearly the normal output. This fruit suffered somewhat from the severe weather of the early spring, and the crop is therefore lighter than it would have been; but prunes are grown all over the State and there is generally a good crop in some portion of it. New orchards are also coming into bearing continually, so that the total output usually reaches the normal even under adverse conditions. In the principal prune section, in Santa Clara and surrounding counties, the crop fell somewhat below the normal, but even here it turned out better than was expected when the fruit began to set. There has been little demand for dried prunes, the market is demoralized, and prices are so low as to leave very little margin of profit for the growers' outlay of labor.

Apples, especially in the coast counties, have been a very light crop and in some counties a total failure. In the Pajaro Valley, the principal apple section of the State, the yield has been very far below normal and the quality inferior. Strenuous work has been done in this district against the codling-moth, with fairly good results; but this year the crop was so light that many growers became discouraged and gave up the work, and as a result there was a great deal of wormy fruit and the quality fell very much below the average. At Lompoc, Santa Barbara County, the second important apple section, conditions were somewhat better, but not in any respect up to the normal. Reports from the apple sections in the mountains are somewhat better and the crop in these parts has been a fairly good one, but even here not reaching the usual average in either output or quality. Shipments have been correspondingly light and prices unsatisfactory.

Citrus Fruits.—The yield of citrus fruits has been nearly up to normal, although falling somewhat below early expectations. Shipments have been very heavy, but losses early in the season demoralized the growers and large quantities of fruit were lost or left to rot on the ground. Later shipments brought better returns. The fruit generally has been of excellent quality and the orchards are reported in good condition.

Olives, which in southern California yielded an extraordinarily heavy crop in 1903, yielded a correspondingly light one the present year. This is due probably to overbearing the preceding year and the habit of the trees in seeking a comparative rest from the other year. In northern counties conditions have been somewhat better, and while a light crop is reported, in some sections it has turned out fairly well.

Figs.—More attention is being paid to this fruit than ever before. The success attained in the production of the genuine Smyrna fig by the introduction of the fig wasp has given an impetus to fig planting, and a very large acreage is being put out to figs in the San Joaquin and Sacramento valleys. The output has been heavier this year than ever before and the crop has been a good one.

Grapes blossomed very freely early in the season and set very heavy. The crop of all varieties was unusually heavy, but late rains coming at the time the fruit was ripening, very seriously injured the crop and the total output was greatly affected thereby. Much of the damaged fruit found its way to the wineries and very much of it was rejected. Notwithstanding, the pack of raisins has been exceedingly heavy and the wineries have reported having put up their usual pack, while shipments of table grapes were heavy, especially in the early part of the season. The shipments of table grapes were cut short by early rains and stopped a full month earlier than usual. Prices for both wine and raisin grapes have reached a very low ebb, but table grapes are still commanding a fair price in the market.

Almonds.—The almond crop was almost a failure. In the principal almond sections there were very few nuts on the trees, and in no part of the State was there a normal crop. This was due to early climatic conditions, which affected the fruit at the time of its forming.

Walnuts have yielded better than usual and very much better than was expected. The walnut blight, which has done very much damage in southern California during the past few years, did but little damage the present season, and reports from Santa Barbara, Ventura, Los Angeles, and Orange counties, in which the principal walnut orchards are found, all indicate that the growers have had fairly good crops of good fruit and prices have been unusually high. The walnut crops this year have been better than any other class of fruit crops.

Small fruits have generally turned out well. The crop of blackberries, especially in Sonoma County, where the fruit is very largely raised, was very heavy. Strawberries have yielded well and all other small fruits have come fully up to the normal. Prices generally have been good and the demand lively. Owing to the shortage of other fruits, small fruits have been in more active demand this season than usual.

MOVEMENTS OF FRUITS.

Fresh Deciduous Fruits.—Shipments of fresh fruits out of the State during the year 1903 exceed those of 1902 by 377 cars. This increase was due to several causes: the small peach crop in the East, a good crop in our own State, and the efforts made by the California Fruit Distributors to widen the market. The past year, however, shows a heavy decrease, due to the shortness of our fruit crop, and the more active home demand for canning purposes.

Shipments of Deciduous Fruits for the Past Five Years.

In carloads.

Variety.	1900.	1901.	1902.	1903.	1904.
Cherries	235	198½	245¾	211	209
Apricots	157	177½	221¾	231¼	97
Peaches	1,374	1,892½	1,777	1,816¾	559
Plums	1,106¼	977¼	1,480¼	1,129½	1,053
Pears	2,099¾	1,535¼	2,005	1,694	2,186
Grapes	765	944	1,010¾	1,717¾	1,451
Apples	256	540¾	335½	456¼	--------
Mixed	25½	39¼	20	148½	71
Totals	6,018½	6,205	7,096	7,405	5,626

Itemized Fresh Deciduous Fruit Shipments.

From north of Tehachapi only. In carloads. To December 1.

Destination.	1899.	1900.	1901.	1902.	1903.	1904.
New York	1,694	1,527	1,482	1,476	1,680	1,202
Chicago	1,060	1,101	1,273	1,298	1,256	924
Boston	710	649	639	746	846	493
Philadelphia	339	212	257	295	384	206
Minneapolis	247	302	275	417	203	210
Omaha	194	240	205	165	129	45
St. Paul	125	131	108	267	217	127
Montreal	128	126	128	102	107	94
Denver	269	233	246	104	109	45
Kansas City	165	129	85	101	109	42
New Orleans	126	136	118	165	241	131
St. Louis	115	79	64	94	142	146
Milwaukee	60	68	62	68	41	40
Pittsburg	137	144	167	276	297	150
Cleveland	83	63	58	101	106	68
Cincinnati	89	35	29	51	64	30
Baltimore	67	34	23	63	84	56
Buffalo	34	10	32	28	25	12
Export	176	270	165	237	218	131
Minor points	1,051	946	1,043	1,083	1,411	1,474
Totals	6,869	6,435	6,459	7,136	7,670	5,626

Varieties of Fruit Shipped.

In carloads.

Variety.	1899.	1900.	1901.	1902.	1903.	1904.
Pears	1,684	2,115	1,535	2,011	1,719	2,186
Peaches	2,625	1,561	1,901	1,777	1,857	559
Grapes	847	825	966	1,033	1,804	1,451
Plums and Prunes	885	1,158	936	1,473	1,145	1,053
Cherries	85	238	110	245	211	209
Apricots	90	152	201	222	241	97
Apples	490	512	739	359	671	43
Quinces	19	10	13	10	19	18
Nectarines	2	--------	2	2	2	4
Figs	--------	--------	--------	2	------	6
Persimmons	1	3	2	2	1	--------
Mixed	24	27	23	--------	------	--------
Cars not reported	117	34	31	--------	------	--------
Totals	6,869	6,435	6,459	7,136	7,670	5,626

Citrus Fruits.—The movement of citrus fruits for the season of 1902–03 was the heaviest in the history of that industry in California, totaling 23,871 carloads. From the time the first shipments of this class of fruit commenced out of our State, there has been a steady increase in the volume of exports, and this volume will be limited only by the demand. In the earlier history of orange production, stories of fabulous returns from orchards, many of which were true at that time, gave an extraordinary impetus to this branch of horticulture in our State, and new orchards are annually coming into bearing to increase the output. There has been a very material decline in profits from orange-growing during the past few years, but, nevertheless, there is little if any diminution of new planting and a large new acreage is set to oranges each season. This is not confined to the southern counties, but as it has been demonstrated that much land in the northern counties is suited to this class of fruit, that in these sections it ripens much earlier and can be marketed to much better advantage on that account, a very strong impetus has been given to this class of fruits in these sections. Tulare County, especially, is making a rapid advance in the growing of citrus fruits, and some very large orchards have been set out here in the past few years. A second promising citrus center in northern California is in Butte County, while smaller districts along the foothill regions of the San Joaquin and Sacramento valleys are going into this line on a larger or smaller scale, and all adding to the total output.

The crop of 1902–03 was little if any below general expectations and was nearly all disposed of at fair prices to the growers. The crop of 1903–04, however, fell below early estimates, which ranged from 30,000 to 35,000 carloads, the latter being a very extravagant estimate. The fruit did not mature well, however; much dropped before it was mature, which lessened the total; while heavy losses on early shipments, with small demand and low prices through the greater part of the season, caused a heavy reduction in the total shipments, which, while in excess of any previous season, have fallen below what they otherwise would have been. Some of the earlier shipments were exceedingly unfortunate. In passing across the continent they were delayed and caught in severe cold weather. Whole carloads were frozen and worthless when they reached the market. Some of this fruit was offered for sale, and was one of several causes for the poor market later in the season. The following table shows the output of citrus fruits in carloads and boxes for a period of ten years:

California Citrus Fruit Shipments.

Season.	Carloads.	Boxes.
1893–94	5,022	1,687,500
1894–95	7,575	2,545,200
1895–96	6,915	2,323,500
1896–97	7,350	2,469,600
1897–98	15,400	5,174,400
1898–99	10,875	3,654,000
1899–00	18,400	6,624,000
1900–01	24,900	8,964,000
1901–02	19,180	6,904,800
1902–03	23,871	8,693,560
1903–04	29,399	10,701,201

Another factor which militated against California in the citrus fruit market this season was the fact that Florida is now recovering from the severe freeze of 1896, which has removed her as a competitor for many years, and she is once again in the market with a large volume of fruit.

With all our increased output of citrus fruits, however, foreign importations continue, and these for comparison are shown in the following table from 1895–96:

Receipts of Foreign Oranges and Lemons.

Season.	ORANGES.		LEMONS.	
	Pounds.	Value.	Pounds.	Value.
1895–96	....	$2,694,131	....	$5,040,344
1896–97	....	2.324,907	....	4,043,822
1897–98	....	886,722	....	2,848,130
1898–99	....	1,097,596	....	4,398,004
1899–00	68,618,818	1,087,041	160,197,966	3,666,881
1900–01	50,332,914	716,457	148,515,614	3,516,850
1901–02	52,742,476	784,640	164,182,952	3,327,781
1902–03	56,873,070	818,780	152,004,203	3,079,221
1903–04	35,893,260	525,468	171,923,221	3 659,598

It would appear that with our annual importation of foreign lemons in excess of three and a half million dollars, there should yet be a market for California lemons.

Prunes.—The prune crop of 1903 and also that of 1904 have very largely exceeded early estimates, although falling below normal in both years. Light rainfall, lowering the water-table, left many trees in the orchards of the Santa Clara prune section with their roots dry, and, as a result, many died, while others gave a small crop of inferior fruit. It was largely upon Santa Clara conditions that the estimate was made, but other prune sections of the State largely compensated for the shortage here, and the result has been a fair, though not normal, crop for both years. In many sections the fruit was of inferior quality and prices have ranged discouragingly low. This disorganized condition of the prune-growers is largely responsible for the depressed condition of the market and the low prices which are being received. The principal varieties used for curing are Prune d'Agen (commonly known as the California French prune), Robe de Sergent, Imperial Epineuse, German and Silver prune. An average of about two and a half pounds of green fruit is required to make one pound of cured fruit. Prunes are graded by machinery, and the regular commercial sizes are 30–40's, 40–50's, 50–60's, 60–70's, 70–80's, 80–90's, 90–100's, 100–110's, 110–120's, being the number of fruits to the pound. The fruit, after being treated and graded, is packed in boxes holding 25 and 50 pounds, and in white cotton sacks holding from 85 to 90 pounds each.

The comparative output of prunes by pounds for the ten years past is shown in the following table:

Prune Yield of California.

	Pounds.		Pounds.
1895	64,750,000	1900	174,000,000
1896	55,200,000	1901	81,600,000
1897	97,780,000	1902	197,000,000
1898	90,420,000	1903	165,000,000
1899	114,227,000	1904 (estimated)	150,000,000

With our continually increasing output of prunes it became necessary to find a wider market, and while there is undoubtedly a large home demand that can be cultivated, we have been pushing our products into foreign countries and selling our fruit in direct competition with French and German prunes in their own country. A peculiar feature of this traffic is that great quantities of California prunes have been purchased in France, re-processed there, returned to the United States, and after paying the import duty here, sold at an advance price as French prunes. A letter from our Consul at Bordeaux, Albion Tourgee, published elsewhere in this report, gives full particulars of this business. While this is not creditable to our consumers, who are willing to pay an extra price for a supposed foreign article, on account of its being foreign, it speaks highly for our California product when it is purchased to supply the leading prune market of the world and sold as its best product. A large percentage of the foreign prunes imported into the United States, as shown in the following tables, are, therefore, of California production:

Quantity and Value of Exports of Prunes.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1897-98	15,940,701	$1,021,888	1901-02	23,358,849	$1,404,422
1898-99	5,615,565	380,847	1902-03	66,385,215	3,512,587
1899-00	25,922,371	1,646,332	1903-04	73,146,214	3,410,497
1900-01	10,021,564	589,113			

Quantity and Value of Foreign Prunes Imported.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1890-91	34,281,322	$2,054,486	1897-98	303,992	$39,660
1891-92	10,869,797	437,271	1898-99	600,360	63,574
1892-93	26,414,112	1,162,318	1899-00	443,457	47,700
1893-94	9,908,122	416,342	1900-01	745,974	62,880
1894-95	14,352,057	527,625	1901-02	522,478	44,077
1895-96	483,658	68,862	1902-03	633,819	63,218
1896-97	710,020	73,303	1903-04	494,105	46,976

It will be noted from a comparison of the above tables that our exports of prunes are steadily increasing, and that imports are correspondingly decreasing, so that we are practically supplying our home demand so far as prunes are concerned, besides filling a large demand in foreign markets.

Our sister States of the Pacific have gone very extensively into prune-growing, and the output of Oregon, Washington, and Idaho is an important factor. California, however, enjoys a great advantage over these sections as a producer of prunes, from the fact that our fruit is all dried in the sun, the hot days of the autumn months being sufficient to cure them, while there is comparatively little danger to be feared from rains at such times. In the cooler and more humid sections of the north, artificial curing is necessary, greatly adding to the cost of the finished product.

Raisins.—The raisin crop both of 1903 and 1904 has been good, and especially that of the past year, when it was one of the largest ever produced in the State. The low price of raisins in 1903 drove a large part of the crop to the wineries, where better prices could be procured; but a material lowering in the price of wine grapes in 1904 has compelled the curing of the larger part of the crop. Heavy and unseasonal rains fell in the midst of the drying season, damaging a large part of the fruit on the trays and also injuring fruit remaining on the vines. In spite of this, the pack has still been a very large one. In many vineyards phylloxera and the Anaheim disease have made great headway. The history of the raisin crop for the past ten years is given in the following table:

California Raisin Pack.

	Pounds.		Pounds.
1895	91,360,000	1900	94,325,000
1896	68,250,600	1901	74,000,000
1897	93,704,000	1902	108,800,000
1898	80,631,000	1903	120,000,000
1899	71,568,000	1904 (estimated)	90,000,000

The importations and exports have been as follows:

Quantity and Value of Raisins Exported.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1897–98	3,109,639	$167,062	1901–02	2,323,274	$149,216
1898–99	4,659,807	242,620	1902–03	4,280,028	284,530
1899–00	2,415,456	139,689	1903–04	4,020,428	281,402
1900–01	3,530,164	218,715			

Quantity and Value of Raisins Imported.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1894–95	15,921,278	$651,420	1899–00	10,309,498	$531,124
1895–96	10,826,094	460,200	1900–01	3,860,876	297,631
1896–97	12,650,598	567,039	1901–02	6,683,545	399,973
1897–98	6,593,833	381,889	1902–03	6,715,675	476,844
1898–99	4,933,201	282,400	1903–04	1,867,617	355,542

Figs.—A great impetus has been given to this branch of horticulture in California by the successful introduction and establishment of the fig wasp (*Blastophaga grossorum*) from Smyrna. Really, a new horticultural industry, and an exceedingly promising one, has sprung up. For very many years efforts had been made, unsuccessfully, to produce the choice fig of southern Europe and Asia, but not until the establishment of this little wasp did we succeed. Figs of an inferior quality were grown, but the imported fig still held the market by its superiority. Now, at last, however, we are producing the genuine Smyrna fig, and in commercial quantities, and a great impetus has been given to fig-growing in the State. There has been a very large area of new orchards set out in the past two years, especially in the San Joaquin and Sacramento valleys, where soil and climatic conditions seem perfectly suited for the production of this fruit.

In a paper on the Fig Insect, Dr. L. O. Howard, Chief Entomologist of the United States Department of Agriculture, alludes to the future possibilities of the fig as follows:

> The Smyrna fig stands in the same relation to other varieties of figs as the Washington Navel orange stands to ordinary varieties of oranges, and its superiority as a dried product over all other varieties which develop without caprification can no longer be questioned. The annual output of Smyrna figs is estimated to be from 12,000 to 15,000 tons, and these figs sell at wholesale in the New York market at from 10 to 20 cents per pound, while the best grade of California figs, as hitherto raised without the assistance of the *Blastophaga*, does not bring more than 75 cents for a 10-pound box, and when the Smyrna figs arrive it is difficult to sell California figs at any price. The successful production of the Symrna practically awakens a new industry for the United States.
>
> In 1894 we imported 13,440,604 pounds of Smyrna figs, the valuation of which was $698,894. After the adoption of the tariff law of 1897, which fixed an import duty of 2 cents per pound, shipments to this country decreased, and the importations for 1898 amounted to 7,992,544 pounds, the valuation of which was $382,784. The following year the importations increased to some extent, and the price was higher. In that year we imported 8,535,967 pounds and the valuation was $504,800. It seems very probable that in the near future these importations will practically be stopped, as our whole country will be supplied with home-grown dried figs. The transportation charges from California, before the construction of a trans-isthmian canal, will keep the prices high in the Eastern States, but it is safe to say that with the better character of the product the total consumption of dried figs will increase. But this feature by no means comprises all the possibilities of the industry. America will compete with the Mediterranean countries in the open markets of the world. The character of the product, even of this first year's crop, shows it to be superior to the Oriental product, both from chemical analysis and from expert opinion. Experience gained this year assures a much better result next year, not necessarily in the quality of the fruit itself, but in methods of drying and packing, and of producing an attractive product for the market. Cleanliness in packing, prevention of the disgusting worms, so often found in the imported Smyrna figs, and other similar points will be carefully attended to by American packers. At present, there are, by no means, enough trees growing in California to bring about this result; but the right varieties will be planted by the thousand during the coming year, and in four or five years will be producing substantial crops.

In spite of the fact that, until recent years, we have not produced the choice fig of commerce, and our pack has consisted largely of the California Black and White Adriatic, fig production has not been a small factor in the total output of California fruits, as the following table will show:

California Cured Fig Output.

			Pounds.
1891	360,000	1898	4,780,000
1892	500,000	1899	5,800,000
1893	900,000	1900	6,000,000
1894	1,540,000	1901	6,500,000
1895	2,750,000	1902	7,250,000
1896	2,160,000	1903	6,000,000
1897	3,250,000	1904	5,500,000

That there is a market for all the figs that California will be able to produce for some time yet, and that there is no immediate danger of overproduction of this fruit, are shown from the following table of imports of foreign figs, which for the fiscal year ending June 30, 1903, was 16,482,142 pounds, and for the past fiscal year was 13,178,061 pounds. There is evidently a very large field yet unfilled in our home market for our domestic product.

Quantity and Value of Figs Imported.

Fiscal Year.	Pounds.	Value.
1894–95	11,855,890	$587,420
1895–96	11,900,710	639,512
1896–97	8,940,762	535,380
1897–98	9,628,426	509,002
1898–99	7,284,058	356,762
1899–00	8,812,487	513,895
1900–01	9,933,871	458,513
1901–02	11,087,131	487,733
1902–03	16,482,142	775,917
1903–04	13,178,061	660,360

Apples.—The apple crop of 1903 was a very good one, and owing to the shortage in the Eastern crop commanded good prices. The past season, however, has been a very unfortunate one. The crop has generally been light, the fruit inferior, and growers have not received satisfactory prices. Shipments for 1904 have consequently fallen off.

California has made such a world-wide reputation with her oranges and other citrus fruits, her raisins, her prunes, and other fruits, that apples have been given a back place, and few, even among Californians, know how important this branch of fruit production has become in the last few years, and it is generally supposed that California can produce every fruit except apples. Yet from one end of the State to the other there are sections in which apples of excellent quality are produced, and in many sections, as Watsonville and Lompoc, the production and shipment of this fruit form the great industry of the inhabitants.

J. A. Filcher, Commissioner to the St. Louis Exposition, gives the following information to the "Apple Specialist" on the subject, which covers the ground:

> The large output of the other deciduous fruits from California leaves the impression on those who have not studied the subject that California is not much of an apple State. This is not true. Recent years have demonstrated that the area adapted to the growth of a superior apple is very extensive, and to-day the best kinds of apple are being produced throughout the entire State, from the famous apple district of Julian in San Diego County on the south to the famous mountain apple region of Siskiyou on the north. It is demonstrated that at certain altitudes all along the western slope of the Sierra the apple does exceptionally well. The slopes of the Coast Range are also adapted to the apple, and in the valleys along the coast where the summer atmosphere is tempered by the breezes from the ocean, the apple thrives and bears abundantly.
>
> Among the most important apple districts as at present developed, you may mention Julian in San Diego County, Antelope valley in Los Angeles County, the sloping hillside in Santa Barbara, and incidentally San Luis Obispo County, the higher foothills of El Dorado, Placer, Shasta, and Siskiyou counties. Near the coast the Watsonville district takes the lead and is to-day turning out more apples than any similar area perhaps in the United States. The shipments last year from 1,000,000 trees, a little more than half of which are bearing, amounted to 1,600 carloads of 640 boxes each. Next to Watsonville as a coast apple district comes Sonoma, and next to Sonoma come Mendocino and Humboldt counties. Incidentally, summer apples are grown throughout the valleys of the State, and winter apples all along the coast and in the higher altitudes.
>
> The present exports of California apples to Europe average over 300,000 boxes per annum. This is a small item compared to the total apple output for the United States, but an important one as a State item, and is regarded as very important by those who understand the industries on the coast and realize that the possibilities of California for the production of a superior apple are beyond computation.
>
> About three carloads of California apples have been displayed at the St. Louis Exposition and their keeping qualities have been demonstrated to be very superior.

The following table shows the exports of California apples since the season of 1899–1900:

Exports of California Apples.

(In boxes.)

New York to—	1899–00.	1900–01.	1901–02.	1902–03.	1903–04.
Liverpool	58,922	61,602	109,715	69,020	107,260
London	70,724	107,752	153,653	126,730	188,643
Glasgow	13,118	22,415	20,449	11,722	24,302
Hull	4,826	7,000	9,681	4,627	------
Hamburg	1,925	1,325	2,929	488	23,486
Various	------	------	------	------	45,284
Totals	149,515	200,094	296,427	212,587	388,975

Walnuts.—The walnut crop of 1903 was below normal and a very large percentage of the nuts of inferior quality. This was due to the prevalence of walnut blight, which had made destructive headway in many of the more important walnut sections of southern California. The past season, however, the blight has not been so prevalent and there has been a much larger crop of nuts and these have been of superior quality. There has been a very active demand for California walnuts this season, and prices have been very satisfactory. The following table shows the steady growth which this branch of the fruit industry has made during the past ten years:

California Walnut Production.

	Pounds.		Pounds.
1895	6,770,000	1900	16,340,000
1896	12,400,000	1901	13,800,000
1897	9,620,000	1902	17,140,000
1898	12,200,000	1903	11,000,000
1899	15,800,000	1904 (estimated)	14,000,000

Almonds.—The crop of 1903 was a good one in most sections and of excellent quality; but that of 1904 was almost a failure, a few isolated trees only producing a full crop, while in the large almond sections there were few nuts. This condition was undoubtedly due to climatic conditions early in the spring, when the almond, like the peach, and other deciduous fruits, suffered from the heavy rains at blooming time.

Almond and Walnut Production, by Carloads.

	Almonds.	Walnuts.		Almonds.	Walnuts.
1898	45	565	1902	327	857
1899	232	558	1903	320	550
1900	274	543	1904 (estimated)	80	750
1901	150	690			

Value of Imported Nuts.

Fiscal Year.	Almonds.	All Other.	Totals.
1894-95	$810,439 00	$1,202,405 00	$2,012,844 00
1895-96	763,594 00	1,311,570 00	2,075,164 00
1896-97	880,263 00	1,319,898 00	2,200,161 00
1897-98	659,659 00	1,578,279 00	2,237,938 00
1898-99	1,222,587 00	1,504,955 00	2,727,542 00
1899-00	949,083 00	2,029,751 00	2,978,834 00
1900-01	946,138 00	2,322,463 00	3,268,592 00
1901-02	1,240,886 00	2,803,333 00	4,044,219 00
1902-03	1,337,717 00	3,528,681 00	4 866,398 00
1903-04	1,246,474 00	3,252,840 00	4,499,314 00

Dried Fruits.—The dried fruit pack of the State reached its highest mark in 1902, when the total was 114,000,000 pounds. This was exclusive of prunes and raisins, and included only the varieties given in the table below. The pack of 1903 was also a heavy one, but that of 1904 has fallen much below, due largely to the short crop of many deciduous fruits and the extra demand from the canneries:

Table of the Dried Fruit Output.

	Pounds.		Pounds.
1891	40,210,000	1898	37,400,000
1892	38,200,000	1899	68,500,000
1893	40,840,000	1900	94,580,000
1894	81,720,000	1901	69,225,000
1895	57,960,000	1902	114,000,000
1896	42,775 000	1903	71,315,000
1897	79,110,000	1904 (estimated)	51,260,000

California Dried Fruit Output, by Varieties.

(In Pounds.)

Varieties.	1899.	1900.	1901.	1902.	1903.	1904. (Estimated.)
Peaches	34,800,000	34,340,000	29,500,000	50,400,000	32,150,000	22,500,000
Apricots	11,600,000	28,080,000	15,750,000	37,500,000	21,000,000	15,000,000
Apples	5,900,000	6,360,000	6,450,000	9,750,000	3,600,000	2,200,000
Figs	5,800,000	6,000,000	6,500,000	7,200,000	6,000,000	5,000,000
Pears	5,760,000	14,550,000	6,575,000	5,250,000	4,650,000	3,500,000
Plums	3,360,000	3,900,000	3,450,000	2,550,000	2,870,000	2,300,000
Nectarines	840,000	870,000	650,000	900,000	635,000	420,000
Grapes	440,000	480,000	350,000	450,000	410,000	340,000
Totals	68,500,000	94,580,000	69,225,000	114,000,000	71,315,000	51,260,000

Canned Fruit.—Owing to the shortage in the deciduous fruit crop during the past season, the pack of canned fruit fell below normal, but that of 1903 was the heaviest in ten years.

California Canned Fruit Pack.

	Cases.		Cases.
1890	1,495,300	1898	2,085,166
1891	1,571,200	1899	3,003,171
1892	1,602,370	1900	2,775,896
1893	1,001,640	1901	2,677,072
1894	1,528,815	1902	2,252,790
1895	1,639,807	1903	2,733,504
1896	1,602,446	1904 (estimated)	2,800,000
1897	1,942,982		

California Fruit and Vegetable Pack, by Varieties.

(In Cases.)

Variety.	1901.	1902.	1903.
Apples	15,972	6,683	5,023
Apricots	294,896	236,071	648,716
Blackberries	21,750	16,661	35,556
Cherries—Royal Ann	28,178	119,227	103,894
Cherries—Black	12,136	26,566	30,506
Cherries—White	11,441	43,419	63,392
Currants	794	219	95
Figs	------	1,388	1,000
Gooseberries	1,371	536	------
Grapes	41,364	31,052	52,621
Loganberries	------	194	4,307
Nectarines	509	755	341
Pears	458,305	302,962	423,831
Peaches—Free	559,500	353,036	339,375
Peaches—Cling	801,788	624,528	559,777
Plums	137,091	150,447	125,567
Quinces	749	2,402	115
Raspberries	3,555	2,975	6,505
Strawberries	15,782	6,205	15,320
Total table fruits	2,405,181	1,925,326	2,415,941
Pie fruit, 2½ lb. cases	31,817	77,889	49,582
Pie fruit, gallon cases	200,492	203,596	231,496
Jams and jellies	39,582	45,979	36,485
Total fruits	2,677,072	2,252,790	2,733,504
Tomatoes, 2½ lb. cases	704,795	750,810	835,394
Tomatoes, gallon cases	43,645	76,242	122,901
Peas	102,089	57,710	70,487
Asparagus	187,592	227.126	256,220
Beans and other vegetables	37,937	39,380	58,572
Total fruits and vegetables	3,753,130	3,404,058	4,077,078

Olives.—California is the only State in the Union in which this fruit has attained commercial importance, and here it has expanded very largely in the past ten years. It has been widely affirmed that the olive could be profitably grown where other fruits would not flourish, and that it would grow, produce, and make good returns under any conditions of neglect. This has resulted in large plantings on worthless lands and many failures, for while under certain conditions the olive exhibits great tenacity of life, and will live and bear some fruit under the most adverse conditions, to get profitable returns it requires a good soil and as good treatment as any fruit that grows. The crop of this fruit for 1903 was a very large one, but that of 1904 has been correspondingly light, especially in the principal olive sections of southern California. A very large part of the fruit is now used for pickling and there is a growing demand for it in this form, which is steadily increasing as the taste for this fruit spreads and the superiority of our product becomes known. The demand for olive oil is not increasing in the same ratio, nor so fast as it should. This is unfortunately due to the fact that cheap and spurious imitations of the genuine article are placed upon the market, and even our most reputable dealers handle imitations, which they sell as genuine. Pure olive oil can never be produced at the same price as cotton-seed or nut oil, and while these latter can masquerade as olive oil and be accepted as such by the consumer, there will be but little advance in the manufacture of the pure article in our State. At the same time, the imports of olive oil are heavy, but a very large percentage of this is either of very inferior quality or altogether spurious. Below is a statement of the receipts of foreign oil for the past ten years:

Imports of Olive Oil.

Fiscal Year.	Gallons.	Value.	Fiscal Year.	Gallons.	Value.
1893-94	757,478	$909,894	1899-00	967,702	$1,170,871
1894-95	775,046	952,405	1900-01	983,059	1,266.293
1895-96	942,598	1,107,049	1901-02	1,339,097	1,579,409
1896-97	928,567	1,134,077	1902-03	1,494,132	1,736,648
1897-98	736,877	923,800	1903-04	1,713,590	1,875,825
1898-99	930,042	1,090,254			

Quantity and Value of Fruits and Nuts Imported into United States during Fiscal Years 1903 and 1904, ending June 30th.

	1903.		1904.	
	Pounds.	Value.	Pounds.	Value.
Oranges	1,677,291	$36,929 00	918,717	$19,350 00
Lemons	25,900,280	523,953 00	26,819	557,373 00
Figs	11,785	635 00	12,378	694 00
Currants	430,232	10,082 00	1,033,278	26,480 00
Dates	1,778	60 00	144,946	3,151 00
Raisins	16,725	1,113 00	63,995	4,587 00
Plums and prunes	25,250	997 00	6,233	189 00
Almonds	542,882	84,713 00	991,548	84,280 00

Shipment of Fruit Out of State by Rail in 1903.

Showing terminal points of shipment. Tons of 2,000 pounds.

Place of Shipment.	Green Decid'us	Citrus.	Dried.	Raisins.	Nuts.	Canned.	All Kinds
Northern California.							
San Francisco	299.9	226.9	9,623.6	63.4	381.9	13,185.9	23,781.6
Oakland	1,302.1	.1	1,205.3	....	202.6	6,931.2	9,641.3
San José	18,474.3	.2	52,137.5	....	466.8	10,156.4	81,235.2
Stockton	12,745.5	16,986.4	24,491.5	25,496.3	545.9	8,849.7	89,115.3
Sacramento	62,270.8	1,538.6	21,989.9	984.5	1,474.4	12,624.2	100,882.4
Marysville	2,668.8	3,713.4	10,583.2	363.3	528.5	5,107.2	22,964.4
Fresno	877.1	....	3,347.8	6,788.1	....	115.5	11,128.5
Interior points not des'gnat'd	836.1	....	5,214.6	3,830.1	49.4	623.2	10,553.4
Total tons	99,474.6	22,465.6	128,593.4	37,525.7	3,649.5	57,593.3	349,302.1
Total carloads, ten tons ea.	9,947.5	2,246.5	12,859.3	3,752.6	365.0	5,759.3	34,930.2
Southern California.							
Los Angeles	1,091.1	172,774.6	7,287.6	566.0	4,518.5	8,175.3	194,413.1
Orange County	....	12,207.0	244.7	....	1,048.8	166.9	13,667.4
Riverside County	....	43,451.8	234.4	30.7	....	176.6	43,893.5
San Bernardino County	92.5	38,365.3	2,248.8	424.3	10.1	253.5	41,394.5
San Diego County	77.3	10,359.1	232.3	590.3	31.7	....	11,290.7
Total tons	1,260.9	277,157.8	10,247.8	1,611.3	5,609.1	8,772.3	304,659.2
Total carloads, ten tons ea	126.1	27,715.8	1,024.8	161.1	560.9	877.2	30,465.9
Total carloads by rail, north and south	10,073.6	29,962.3	13,884.1	3,913.7	925.9	6,636.5	65,396.1
Total carloads by sea from San Francisco	346.3	....	1,069.0	82.6	11.9	2,783.9	4,293.7
Total carloads from State by rail and sea	10,419.9	29,962.3	14,953.1	3,996.3	937.8	9,420.4	69,689.8

Shipment of Fruit from San Francisco by Sea in 1903.

Tons of 2,000 pounds.

Place of Shipment.	Fruit.	Dried.	Prunes.	Raisins.	Nuts.	Canned.	All Kinds
San Francisco	3,463.2	1,952.0	8,737.9	826.4	118.8	27,839.2	42,937.5
Total tons	3,463.2	1,952.0	8,737.9	826.4	118.8	27,839.2	42,937.5
Total carloads, ten tons each	346.3	195.2	873.8	82.6	11.9	2,783.9	4,293.7

GENERAL SUMMARY AND COMPARATIVE TABLES OF SHIPMENTS OUT OF STATE, BY RAIL AND BY SEA, OF FRUITS, WINE, BRANDY, AND VEGETABLES FOR TEN CONSECUTIVE YEARS. TONS OF 2,000 POUNDS.

Kinds.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.
Green deciduous	90,692.2	66,254.8	57,638.3	72,350.2	69,732.2	96,943.6	91,176.5	93,673.7	100,390.9	104,198.7
Citrus fruits	58,964.0	115,825.5	99,156 0	98,547.0	180,658.9	131,916.8	226,546.6	323,871.4	225,668.8	299,623.4
Dried fruits	51,828.2	61,386.4	48,522.8	75,159.7	76,662.7	86,925.3	90,052.8	106,987.1	151,944.5	149,531.1
Raisins	46,954.4	46,390.1	34,434.6	39,065.8	47,796.3	36,008.7	36,047.0	43,314.0	47,575.2	39,963.4
Nuts	3,953.5	3,234.7	4,972.6	5,808 6	5,815.8	6,608.4	6,518.4	8,462.4	10,918.9	9,377.4
Canned fruits	60,352.6	41,395.5	45,546.9	73,464.7	52,219.7	75,240.0	75,556.9	83,229.1	80,634.8	94,204.8
Carloads fruit, by rail and by sea	31,274.4	33,547.2	29,026.7	36,439.6	43,288.6	43,364.3	52,901.5	65,953.8	61,713.3	69,689.8
Carloads vegetables, by rail	4,276.6	3,613.6	1,130.6	4,243.8	3,045.6	2,613.6	4,367.8	8,371.7	6,130.2	7,839.2
Carloads vegetables, by sea	410.0	40.0	487.7	490.8	801.4	790.7	772.9	801.1	826.4	822.6
Carloads wine and brandy, by rail and sea	7,663.5	8,056.8	7,609.0	6,897.8	9,014.0	8,713.9	9,067.3	8,605.3	8,868.2	9,733.2
Carloads fruit, vegetables, wine, and brandy, by rail and sea	43,624.7	45,257.4	38,254.0	48,072.0	56,149.6	55,482.5	66,797.8	83,731.9	77,538.1	88,084.8

EXPORTS OF FRUIT AND NUTS FROM THE UNITED STATES DURING THE FIVE YEARS ENDED JUNE 30, 1904.

Articles Exported.	1900.		1901.		1902		1903.		1904.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Fruits—										
Apples, dried (lbs.)	34,964,010	$2,247,851	28,309,023	$1,510,581	15,664,468	$1,190,593	459,579	$26,024	1,168,030	$67,517
Apples, green or ripe (bbls.)	526,636	1,444,655	883,673	2,058,964	459,719	1,628,886	2,127	6,910	925	3,552
Apricots, dried					1,928,367	178,143	370,244	26,092	72,980	5,679
Oranges		271,468		436,560		420,835		56,830		86,823
Prunes (lbs.)	25,922,371	1,646,332	10,021,564	589,113	23,358,849	1,401,422	2,823,839	131,593	1,241,249	60,926
Raisins (lbs.)	2,415,456	139,689	3,512,161	218,715	2,323,274	149,216	160,583	9,733	213,339	11,465
Other green, ripe, dried		2,545,451		2,716,269		2,153,050		202,486		194,996
Preserved—										
Canned		3,127,278		3,006,109		1,195,635		62,488		26,930
Other		63,448		71,597		94,323		4,796		10,150
Total fruits		$11,486,172		$10,607,908		$8,415,103		$526,952		$468,038
Nuts		156,490		218,743		304,241		20,669		23,978
Total fruits and nuts		$11,642,662		$10,826,651		$8,719,344		$547,621		$492,016

Included in the dried fruit shipments for 1901–02 were 1,928,367 pounds of apricots, valued at $178,143, which had not been segregated prior to this year.

NUMBER OF FRUIT TREES GROWING IN CALIFORNIA IN THE SPRING OF 1904.

As per Assessors' Returns.

Counties.	Apple.		Apricot.		Cherry.	
	Bearing.	Non-Bearing.	Bearing.	Non-Bearing.	Bearing.	Non-Bearing.
Alameda	55,000	800	100,000	8,000	82,000	19,000
Alpine	1,700	200	75	20	--------	--------
Amador	4,690	950	1,320	45	640	100
Butte	6,530	--------	10,700	--------	7,340	--------
Calaveras	6,000	4,000	2,000	1,000	500	200
Colusa	4,600	1,220	14,580	3,100	600	250
Contra Costa	9,450	955	47,265	4,360	8,725	850
Del Norte	8,200	700	--------	--------	600	--------
El Dorado	28,140	5,090	1,800	500	3,600	890
Fresno	8,000	2,600	27,000	560	60	--------
Glenn*	--------	--------	--------	--------	--------	--------
Humboldt*	--------	--------	--------	--------	--------	--------
Inyo	19,985	--------	395	--------	200	--------
Kern	7,000	3,000	20,000	--------	1,000	--------
Kings	2,000	--------	81,800	1,300	--------	--------
Lake	13,645	--------	1,195	--------	440	--------
Lassen	48,765	--------	300	--------	1,135	--------
Los Angeles	136,110	31,710	115,610	6,300	175	1,075
Madera	3,500	--------	5,850	--------	35	--------
Marin	20,165	1,115	5,600	2,160	425	80
Mariposa	10,900	--------	1,090	--------	400	--------
Mendocino*	--------	--------	--------	--------	--------	--------
Merced	4,200	955	16,000	4,110	325	60
Modoc	42,780	--------	1,960	--------	2,230	--------
Mono*	--------	--------	--------	--------	--------	--------
Monterey	42,200	21,000	19,200	3,400	1,100	200
Napa	49,600	12,200	13,500	2,000	23,650	8,600
Nevada	16,300	--------	2,400	--------	1,200	--------
Orange	9,715	3,700	115,420	45,060	--------	--------
Placer	19,400	6,770	14,900	7,670	16,200	9,000
Plumas	4,215	1,820	--------	--------	--------	--------
Riverside	3,535	16,830	30,600	6,254	800	590
Sacramento	5,800	1,200	22,000	33,000	4,500	8,500
San Benito	8,500	1,100	14,500	--------	2,500	--------
San Bernardino	12,500	1,500	47,500	1,800	9,800	2,300
San Diego*	--------	--------	--------	--------	--------	--------
San Francisco*	--------	--------	--------	--------	--------	--------
San Joaquin	9,760	1,820	95,745	3,980	21,985	5,220
San Luis Obispo	72,200	11,900	59,850	6,200	7,840	2,700
San Mateo	27,000	3,800	11,800	640	1,350	--------
Santa Barbara	13,590	7,490	7,120	1,865	--------	--------
Santa Clara	17,100	39,000	541,250	9,400	129,100	21,600
Santa Cruz	285,365	272,325	36,245	33,740	18,095	5,170
Shasta	15,000	--------	500	--------	500	--------
Sierra	7,100	--------	--------	--------	2,000	--------
Siskiyou*	--------	--------	--------	--------	--------	--------
Solano	2,265	--------	33,155	--------	36,740	--------
Sonoma	210,470	72,470	18,990	2,530	42,620	18,840
Stanislaus	5,000	700	16,600	500	80	120
Sutter	5,350	--------	5,500	--------	1,500	--------
Tehama	17,500	1,650	63,745	4,710	3,310	1,670
Trinity	4,800	2,500	40	10	500	140
Tulare	2,515	1,560	75,970	590	250	--------
Tuolumne	4,000	5,000	2,000	560	2,800	365
Ventura	7,025	1,165	176,910	24,340	1,400	--------
Yolo	420	--------	198,000	--------	7,500	--------
Yuba	7,400	10,090	15,000	41,000	1,000	3,000
Totals	1,326,965	550,885	2,092,980	260,704	448,550	110,520

* No report.

NUMBER OF FRUIT TREES GROWING IN CALIFORNIA IN THE SPRING OF 1904.

As per Assessors' Returns.

Counties.	Fig.		Olive.		Peach.	
	Bearing.	Non-Bearing.	Bearing.	Bearing.	Bearing.	Non-Bearing.
Alameda	200		4,300	1,000	86,000	1,100
Alpine						
Amador	470	25	165	55	13,720	340
Butte	10,200		113,725		127,420	
Calaveras	400	200	5,000	1,000	4,000	1,000
Colusa	3,475	100	2,450	1,000	11,000	1,500
Contra Costa	2,560	620	18,275	4,375	25,935	3,565
Del Norte					300	
El Dorado	1,450	300	1,900	500	114,270	19,000
Fresno	14,000	160	1,100		20,000	16,000
Glenn*						
Humboldt*						
Inyo	60				5,300	
Kern	1,000		5,000		40,000	
Kings					167,000	47,500
Lake	800		1,320		8,105	
Lassen					865	
Los Angeles	1,750	560	373,430	57,110	146,745	12,710
Madera	635		5,500		22,500	
Marin	215	55				
Mariposa	1,350		9,000		5,670	
Mendocino*						
Merced	11,145	3,510	28,185	1,460	95,760	25,100
Modoc					2,850	
Mono*						
Monterey			450	100	6,500	3,600
Napa	1,650	200	52,000	1,200	97,650	12,670
Nevada	380		400		6,500	
Orange	2,200		19,115		18,910	23,585
Placer	5,100	2,960	36,000	20,000	804,200	597,600
Plumas					500	400
Riverside	1,705	10	35,315	11,645	29,200	9,415
Sacramento	1,200	2,600	12,200	6,500	11,000	38,000
San Benito	200		300		14,070	1,230
San Bernardino	1,600	800	21,500	13,000	62,000	2,000
San Diego*						
San Francisco*						
San Joaquin	4,430	1,030	18,820	4,330	138,710	19,510
San Luis Obispo	2,440	1,250	3,230	860	65,350	19,100
San Mateo	100		8,750	800	1,200	
Santa Barbara			19,470	10,620	5,405	2,045
Santa Clara	1,600	530	9,320	4,750	510,700	37,900
Santa Cruz	360	150	720	620	17,575	1,420
Shasta	1,000		12,000		60,000	
Sierra					400	
Siskiyou*						
Solano	5,430		3,050		322,570	
Sonoma	3,970	1,350	59,270	44,990	256,710	8,850
Stanislaus	4,000	6,000	9,600	400	20,800	16,000
Sutter	1,420		1,025		97,845	
Tehama	10,090	1,245	18,500	119,760	580,850	116,050
Trinity	15	10	10		1,450	500
Tulare	3,715	460	1,245	945	280,378	10,870
Tuolumne	950	270	25	25	9,100	2,900
Ventura			35,380		6,380	
Yolo	4,100		20,000		149,500	
Yuba	4,500	2,000	8,000	1,800	64,000	27,000
Totals	111,865	26,395	975,045	308,845	4,536,793	1,078,460

No report.

NUMBER OF FRUIT TREES GROWING IN CALIFORNIA IN THE SPRING OF 1904.

As per Assessors' Returns.

Counties.	Pear.		Prune (French).		Prune (other kinds).	
	Bearing.	Non-Bearing.	Bearing.	Non-Bearing.	Bearing.	Non-Bearing.
Alameda	66,000	4,000	145,000	22,000	2,100	400
Alpine			120	50		
Amador	6,215	70	1,230	1,340	230	60
Butte	20,995		73,125		15,430	
Calaveras	500	100	200	200	800	100
Colusa	26,095	575	72,400	100		
Contra Costa	64,125	16,180	32,450	6,530	8,515	1,415
Del Norte	650				1,500	
El Dorado	68,000	34,050	16,020	150	90,000	2,500
Fresno	1,040	480	2,600	960		
Glenn*						
Humboldt*						
Inyo	5,300		1,325		2,200	
Kern	1,500		70,000		1,000	
Kings			77,000	1,800	4,500	
Lake	16,730		41,880		4,190	
Lassen	1,895		570		1,470	
Los Angeles	15,325	8,070	25,750	3,065	23,845	750
Madera	2,000		4,200			
Marin				2,350	400	
Mariposa	2,550		1,000		1,200	
Mendocino*						
Merced	9,200	1,620	18,430	2,640		
Modoc	1,740				1,700	
Mono*						
Monterey	4,000	1,000			8,760	
Napa	58,260	2,250	125,840	56,400	34,000	1,850
Nevada	23,200		1,300			
Orange	3,280	1,560	20,450	5,820		
Placer	112,700	53,000	7,000	3,000	118,900	176,400
Plumas	800	600				
Riverside	9,575	3,735	38,295			
Sacramento	65,300	57,000	24,000	46,000	27,000	43,000
San Benito	9,500	2,500	75,000	7,000	8,000	
San Bernardino	2,800	800	21,500	13,000		
San Diego*						
San Francisco*						
San Joaquin	23,145	1,715	30,900	5,930	5,840	610
San Luis Obispo	37.300	8,900	160,400	31,020	44,200	9,600
San Mateo	4.000				31,000	
Santa Barbara	1,210	480	1,245	450	1,365	385
Santa Clara	122,150	15,700	3,920,140	357,400	48,710	37,900
Santa Cruz	15,600	2,480	112,990	16,140	19,265	4,995
Shasta	10,000		70,000		6,500	
Sierra					15	
Siskiyou*						
Solano	218,550		281,460		105,630	
Sonoma	76,240	23,970	480,670	110,260	44,590	5,290
Stanislaus	4,060	320	11,560	2,880		
Sutter	4.520		26,865		1,655	
Tehama	45,790	15,260	83,135	7,835	16,430	4,225
Trinity	500	200	1,000	200	500	100
Tulare	5,895		333,010	15,975	5,670	345
Tuolumne	2,300	500			300	150
Ventura			25,875			
Yolo	51,000		122,000			
Yuba	18,000	3,100	179,000	5,060	3,400	600
Totals	1,438,535	260,215	6,736,935	725,555	690,810	290,675

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* No report.

Kings, miscellaneous, 7,100; Madera, nectarines, 2,450; San Benito, nectarines, 250; Santa Clara, nectarines 1,025, quinces 2,440.

NUMBER OF FRUIT TREES GROWING IN CALIFORNIA IN THE SPRING OF 1904.

As per Assessors' Returns.

Counties.	Lemon.		Orange.		Almond.		Walnut.	
	Bearing.	Non-Bearing.	Bearing.	Non-Bearing.	Bearing.	Non-Bearing.	Bearing.	Non-Bearing.
Alameda	1,200	100	2,300	100	79,000	4,000	2,000	300
Alpine	--------	--------	--------	--------	--------	--------	--------	--------
Amador	15	5	370	65	3,140	520	90	35
Butte	930	--------	321,430	--------	19,320	--------	875	--------
Calaveras	50	50	250	250	800	300	500	500
Colusa	300	20	3,650	250	16,220	600	1,410	150
Contra Costa	330	75	1,100	130	147,825	50,875	3,450	2,430
Del Norte	--------	--------	--------	--------	--------	--------	--------	--------
El Dorado	150	--------	1,260	850	2,000	600	500	200
Fresno	160	--------	1,200	400	200	10	25	30
Glenn*	--------	--------	--------	--------	--------	--------	--------	--------
Humboldt*	--------	--------	--------	--------	--------	--------	--------	--------
Inyo	--------	--------	--------	--------	200	--------	375	--------
Kern	300	--------	4,000	--------	1,200	--------	100	--------
Kings	--------	--------	--------	--------	--------	--------	--------	--------
Lake	--------	--------	55	--------	5,460	--------	200	--------
Lassen	--------	--------	--------	--------	20	--------	460	--------
Los Angeles	145,675	33,840	611,420	275,870	42,615	8,175	95,235	63,415
Madera	40	--------	175	--------	1,075	--------	50	--------
Marin	35	20	535	75	135	45	60	45
Mariposa	175	--------	450	--------	425	--------	250	--------
Mendocino*	--------	--------	--------	--------	--------	--------	--------	--------
Merced	1,600	200	8,100	2,610	18,125	4,175	825	210
Modoc	--------	--------	--------	--------	--------	--------	--------	--------
Mono*	--------	--------	--------	--------	--------	--------	--------	--------
Monterey	--------	--------	--------	--------	--------	--------	--------	--------
Napa	450	180	3,385	260	45,860	9,680	9,560	2,150
Nevada	180	--------	320	--------	380	--------	425	--------
Orange	35,605	45,610	422,180	94,785	--------	--------	113,850	70,190
Placer	900	850	27,800	17,400	6,300	3,900	1,000	700
Plumas	--------	--------	--------	--------	--------	--------	--------	--------
Riverside	111,567	7,075	995,000	309,075	10,145	1,500	1,400	20
Sacramento	1,500	950	24,800	20,000	32.700	30,000	1,900	1,700
San Benito	--------	--------	100	--------	8,500	--------	1,000	--------
San Bernardino	165,500	25,500	1,150,000	530,000	1,700	350	3,950	250
San Diego*	--------	--------	--------	--------	--------	--------	--------	--------
San Francisco*	--------	--------	--------	--------	--------	--------	--------	--------
San Joaquin	310	--------	2,245	1,200	12,970	6,415	500	410
San Luis Obispo	14,800	7,560	4,210	1,580	6,000	720	25,250	10,780
San Mateo	110	--------	120	--------	560	--------	550	--------
Santa Barbara	79,280	53,520	985	540	1,310	--------	18,460	15,920
Santa Clara	365	695	990	725	15,420	4,940	9,250	2,450
Santa Cruz	165	90	145	80	340	30	1,370	4,555
Shasta	250	--------	1,000	--------	2,000	--------	250	--------
Sierra	--------	--------	--------	--------	--------	--------	--------	--------
Siskiyou*	--------	--------	--------	--------	--------	--------	--------	--------
Solano	2,130	--------	3,440	--------	100,240	--------	3,760	--------
Sonoma	740	250	8,710	2,010	7,020	3,015	4,040	1,380
Stanislaus	65	15	8,960	2,240	7,600	1,600	320	240
Sutter	55	--------	735	--------	25,720	--------	60	--------
Tehama	405	280	4,900	5,480	62,205	945	3,970	500
Trinity	10	5	--------	--------	20	10	75	25
Tulare	32,800	575	177,240	47,960	1,200	385	500	240
Tuolumne	100	75	325	100	325	50	860	850
Ventura	61,530	4,190	83,135	19,990	14,385	--------	69,240	10,965
Yolo	1,500	--------	8,000	--------	120,000	--------	2,500	--------
Yuba	30,700	2,100	33,800	29,600	5,000	700	2,100	5,060
Totals	691,977	186,830	3,918,820	1,363,615	827,660	133,600	382,545	195,700

* No report.

ENTOMOLOGICAL.

Bug vs. Bug.
Insects of the Year.
Pear Blight.

LIBRARY OF THE UNIVERSITY OF CALIFORNIA

BUG VS. BUG.

By JOHN ISAAC.

A somewhat small and unpretentious exhibit was that made at the St. Louis Exposition by the State Commissioner of Horticulture, but it was one that attracted a great deal of attention, especially among scientific men and the more intelligent class of orchardists and farmers who visited that great exposition. This exhibit consisted of a very complete and well-arranged collection of the various insect friends to which California owes so much of her prosperity, and which are ever and continuously working in our interest. Many of these insects are exceedingly minute, so much so as to be practically out of the range of the naked eye. To overcome this difficulty they were displayed behind magnifying glasses of sufficient power to enable them to be seen, while descriptions of them and the work they are doing for our State were made in plain language. The result of this has been a great deal of inquiry from Eastern sources as to our beneficial insects and our California method of fighting bugs with bugs. To answer these inquiries, as well as to give our own people a wider knowledge of what our insect friends are doing for us, the following pages have been prepared.

Below is a list of the different insects exhibited at the St. Louis Exposition by this Commission:

PREDACEOUS COCCINELLIDÆ.

Beneficial Insects.	*Host Insects.*
Vedalia cardinalis	Cottony Cushion Scale (Icerya purchasi).
Novius koebelei	Cottony Cushion Scale (Icerya purchasi).
Novius bellus	Cottony Cushion Scale (Icerya purchasi).
Vedalia sp. (black)	Cottony Cushion Scale (Icerya purchasi).
Rhizobius ventralis	Black Scale (Saisseta oleæ).
Rhizobius ventralis, larvæ	Black Scale (Saisseta oleæ).
Orcus australasia	Black Scale (Saisseta oleæ).
Orcus chalybeus	Yellow Scale (Chrysomphalus [Aspidiotus] citrinus).
Rhizobius toowoombæ	San José Scale (Aspidiotus perniciosus).
Scymnus vagans	Red Spider (Tetranychus telarius).
Rhizobius debilis	Various scale insects.
Cryptolæmus montrouzieri	Mealy Bugs (Pseudococcus [Dactylopius] sp.).
Hyperaspis lateralis	Cypress Mealy Bugs (Pseudococcus ryani).
Exochomus pilatii	Various scale insects.
Chilocorus bivulnerus	San José Scale (Aspidiotus perniciosus), and others.
Coccinella sanguinea	Various scales and aphids.
Coccinella californica	Various aphids.
Coccinella abdominalis	Various aphids.
Coccinella oculata	Various aphids.
Hippodamia ambigua	Various aphids.
Hippodamia convergens	Various aphids.

PARASITIC HYMENOPTERA, DIPTERA, ETC.

Beneficial Insects.	*Host Insects.*
Scutellista cyanea	Black Scale (Saisseta oleæ).
Dilophogaster californica	Black Scale (Saisseta oleæ).
Hymencyrtus crawii	Black Scale (Saisseta oleæ).
Aphelinus mytilaspidis	Black Scale (Saisseta oleæ).
Aspidiotophagus citrinus	Yellow Scale (Chrysomphalus [Aspidiotus] citrinus) and San José Scale (Aspidiotus perniciosus).
Pteromalus puparum	Internal parasite of the Cabbage Butterfly (Pieris rapæ).
Comys fusca	Brown Apricot Scale (Eulecanium armeniacum).
Encyrtus flavus	Soft Brown Scale (Lecanium [Coccus] hesperidum).
Coccophagus lecani	Soft Brown Scale (Lecanium [Coccus] hesperidum).
Coccophoctonus sp.	Yellow and Red scales.
Eupelmus mirabilis	Internal parasite of the Katydid (Microcentrum retinervis).
Braconid sp.	Parasite of Cutworm.
Anastatus sp.	Egg parasite of Tent Caterpillar.
Tachnia fly	Internal parasite of Cabbage Butterfly (Pieris rapæ).
	Internal parasite of Lecanium robinarum.
Aphelinus sp.	Internal parasite of Aphis.

Somewhere about the year 1868, a California nurseryman in San Mateo County, not far from San Francisco, imported some lemon trees from Australia. There was nothing unusual about this, nor was there apparently anything unusual on the trees themselves; nevertheless that importation cost the State of California millions of dollars and came near destroying one of the most important of its fruit industries, for on those trees, unseen and unnoticed by any one, were some of the young of the now well-known cottony cushion scale (*Icerya purchasi*). These soon reached their mature stage, and still no notice was taken of them; they were regarded merely as a curious object when noticed, and it was never dreamed that they were the commencement of one of the most terrible pests that California fruit-growers have ever known. The insects increased in numbers, but not being in a fruit section, and their depredations being confined largely to ornamental stuff, they were disregarded. Soon afterwards a Los Angeles nurseryman and florist secured some of the imported stock, with the imported pest, and so it was introduced into southern California. Here conditions were better suited to it than even in the section where it had first obtained a footing in the State, and it spread much more rapidly. Soon it got into the orange orchards. Here conditions seemed perfect, and in a very short time it had spread to an alarming extent. Orchards in which it had become firmly established were covered with it until they looked as though they had been exposed to a severe snowstorm. It was soon found in remote sections, and in a short time appeared to have taken possession of the whole country. Nor did it confine itself to the orange trees; many varieties of fruit and a great quantity of ornamental plants fell beneath its attacks. It even found its way to forest trees, and for some time it looked as though it would reduce the whole country to a desert. Orange-growers were in despair. From eight thousand carloads, shipments dropped to six hundred in one year. Every possible remedy was tried, but none was found effective, and even the most costly served only to temporarily check the spread of the pest. Orange-growers were digging out and burning their trees to get rid of the pest, but even this did not avail, for had all the orchards been destroyed there was sufficient wild stuff to keep it spreading.

In 1888 the National Government made an appropriation for the purpose of advancing the American interests at the Melbourne Exposition, and the appointment of the late Hon. Frank McCoppin as chairman of the commission to forward said interests was the nucleus of California's first effort in the search for natural enemies of orchard pests. McCoppin's friends in the orange district where this pest had caused such terrible losses urged that he should do something to save the orange industry. Correspondence was opened with the Hon. Thomas F. Bayard, Secretary of State, and through him, with the Secretary of the Interior, whose department at that time had charge of the entomological division. This resulted in the sending of Albert Koebele, who discovered the *Vedalia cardinalis*, with the commission. While there were others in the State who were convinced of the parasitic theory and enthusiastic in their efforts to bring about the investigation, there was no available money until the above opportunity presented itself.

This discovery of a small ladybird known as the *Vedalia cardinalis* started California on her present course of fighting bugs with bugs, and no doubt this will continue until every insect pest that disturbs plant life and its fruits will be overcome by natural insect enemies, even if it should require traversing the very ends of the earth.

It is to be hoped that other States, and the National Government, will take up this work and thereby save hundreds of millions of dollars loss that is now borne by the cultivators of the soil.

This ladybird was collected and forwarded to California and distributed all over the State wherever the scale had made its appearance.

Nearly, if not quite, all of the injurious pests of any section are introduced species, and in every case they have been introduced without their checks, for in its native habitat every pest, in fact, every form of life, has some other form of life which preys upon it and prevents it from becoming redundant. Now, when any such form is removed to a new section, where it has no natural enemies, there is nothing to stop its unlimited spread, and as insects propagate more rapidly than any other form of animal life, without some check they would soon overrun everything within reach. These checks are usually other insects, and they are divided into two general classes—the predaceous class, or those which devour their prey from the outside, the most important among which is the great ladybird family, and the parasitic class, or those which work in or on the body of their host. These latter are often microscopic, or very nearly microscopic, in size, but are among the most effective of our insect friends.

Usually each predaceous or parasitic insect attacks but one kind of insect; each has its own particular form of food and will touch no other. The *Vedalia*, for instance, lives wholly upon the cottony cushion scale, and if it can not get this, it will starve before it will touch any other form of food, so that, in searching for the enemies of our destructive insects, it is necessary to find just the right one.

It is a fact well known to all entomologists, that in their native homes, while insects are sometimes very troublesome, and in some sections exist in unusual numbers, they never become the serious pests that they do when they are removed to a new country where their checks do not exist. Usually in their native homes they are rather rare than otherwise. So when it is known that any pest is especially severe in any section, as, for instance, the San José scale (*Aspidiotus perniciosus*) over a great part of the Eastern States, it is very certain that it has been introduced there, and in order to find its check, we must find its native home, where it is scarce, and then we must find what agency is keeping it down. Sometimes our native parasites will adapt themselves to the introduced species, as has been the case in California with the San José scale. This pest was as great a terror to our growers some twenty years ago as it now is over a great part of the Eastern States; but one of our native parasites, the *Aphelinus fuscipennis*, adapted its taste to it, and finding in the San José scale a suitable food supply, it increased with almost unprecedented rapidity until it overtook the scale, and to-day this scale is no longer a pest in the California orchards. It is true that it occasionally makes its appearance in remote sections, but never to any dangerous extent, and the little parasite soon overtakes it and reduces it below the danger line. So little regard is paid to the San José scale in California now, that we never recommend any action against it. Spraying is still carried on, but this is more for the purpose of keeping the trees clean and healthy than for the purpose of getting rid of the San José scale. Before this parasite did such effective work, California orchardists were having very much the same experience that their Eastern brethren are having now, and trees by thousands were dug out and destroyed in order to get rid of the scale. It is to be hoped that the days of this terrible pest in the Eastern orchards are numbered, for it has been discovered that the same parasite which has freed the California orchards is now at work there, and in a report made by Prof. W. G. Johnson, when entomologist of Maryland, he says:

> Since we assumed charge of the State work in Maryland, we have collected the San José scale on various food plants and inclosed infested twigs, about four inches in length, in glass cylinder tubes, open at both ends; the ends were closed with cotton, and if any parasites existed upon the scale, they were easily detected and mounted for

study. Only upon rare occasions have we taken more than a half-dozen specimens from a single tube. This experience has been repeated year after year until the fall of 1899. * * * Last fall, however, I discovered a new locality for *Aphelinus fuscipennis*, near Easton, Talbot County, in an infested orchard along the Miles River. The orchard contained a miscellaneous variety of fruits, and all the trees were quite seriously infested with the San José scale. Instructions have been given the owner to cut them down as soon as possible and burn them. A quantity of small branches infested with scale were brought to the laboratory and inclosed in breeding tubes. Much to my surprise, these tubes were swarming with parasites a few days later. From one tube 1,114 specimens of *Aphelinus fuscipennis* were taken, while a second tube gave 432, a third, 1,478, and a fourth more than 1,000, but owing to an accident, the count in the case last mentioned was not exact.

The California method of fighting insect pests is to use the most efficient artificial means while we have to, and to this end we apply all sorts of known washes, dips, and fumigation, but, while so doing, we realize that these measures are very cumbersome, costly and inefficient, and that nature has provided a better way, and it is of this way that we avail ourselves. We endeavor to trace back the course traveled over by our destructive pests, to trail them to their native lair, and there we will find their check. This check, whether it be a parasitic or a predaceous insect, or both, as sometimes found, we secure, introduce, and breed, with the greatest care, in our insectary, where it becomes acclimated in its new home, and as it propagates it is sent into those sections where the pest upon which it is to prey is most prevalent. This method has been found so effective that we have now very few really troublesome orchard pests, the worst at the present time being the codling-moth, and for this we hope to find a natural check, and are now working towards that end.

It must not be supposed from this that there are no insect pests in California. We have been importing these pests from all parts of the world for half a century past and have had representatives from all parts of the world, and have them still, for when an insect once obtains a foothold, its eradication is practically impossible, but by introducing its natural enemy, we offset one against the other, and give ourselves no further uneasiness as to the outcome. The pests may do some damage, they may break out in sections in unusual numbers for a time, but invariably they are reduced below the line of serious damage shortly by the natural means, and it is done more effectively and permanently than can be done by any artificial method.

In an address before the fourteenth annual meeting of the Association of Economic Entomologists, Prof. C. L. Marlatt gave an account of a trip he had made to Japan and China in search for the native home of the San José scale, and in speaking of its discovery there he alluded to parasites which he found working upon it, and which are the same species which have done such good work on this pest in California. He said:

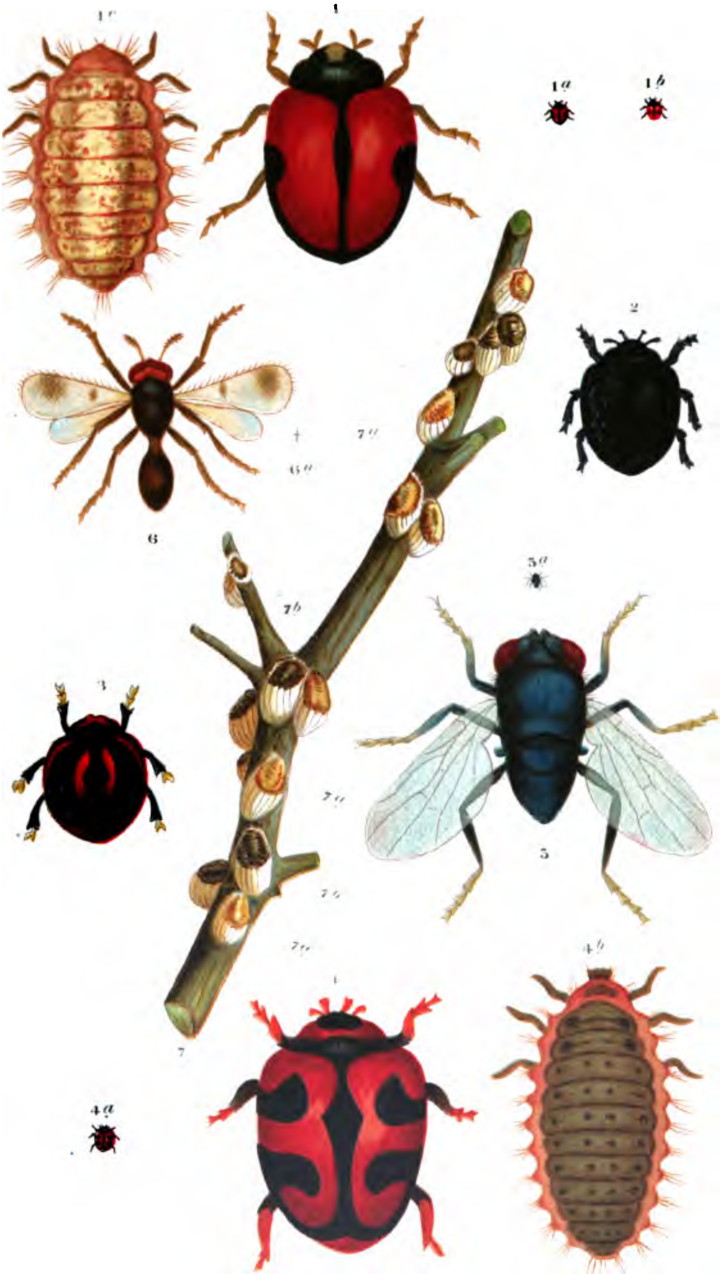
The apple industry of Japan is of recent origin, say within the last thirty years; most of the stock has been obtained from California, and as a rule was more or less infested

EXPLANATION OF PLATE I.

Fig. 1. *Novius koebelei,* Olliff; Koebele's ladybird. Male; enlarged.
1*a*. *Novius koebelei.* Male; natural size.
1*b*. *Novius koebelei.* Female; natural size.
1*c*. *Novius koebelei.* Larva; enlarged.
2. "Black Vedalia." Enlarged.
3. *Novius bellus;* beautiful ladybird; enlarged.
4. *Novius* (*Vedalia*) *cardinalis*, Mulsant; Australian ladybird; enlarged.
4*a*. *Novius* (*Vedalia*) *cardinalis.* Natural size.
4*b*. *Novius* (*Vedalia*) *cardinalis.* Larva; enlarged.
5. *Lestophonus icerya.* Dipterous parasite of the cottony cushion scale; enlarged.
5*a*. *Lestophonus icerya.* Natural size.
6. *Ophilosia crawfordi.* Hymenopterous parasite of the cottony cushion scale; enlarged.
6*a*. *Ophilosia crawfordi.* Natural size.
7. Twig infested with cottony cushion scale; natural size.
7*a*. *Icerya purchasi crawii,* Cockerell.
7*b*. *Icerya purchasi maskelli.*

CALIFORNIA STATE COMMISSION
OF HORTICULTURE.

PLATE I



STEWART DEL.

BUG VS BUG.

THE BENEFICIAL INSECTS
THAT SAVED THE
CITRUS FRUIT INDUSTRY OF CALIFORNIA.

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with San José scale when received. Throughout this region the San José scale was found scatteringly in all orchards and in all gardens. In Aomori and vicinity it is doing no very great damage in any of the orchards, but in some of the small gardens and especially in one or two neglected ones in the city of Aomori, it was as abundant on particular trees as it often is in America. At the first investigation no evidence of parasitism was seen, but from later collections, two of the parasites which attack the scale insect in America were raised in great numbers from infested branches collected at Aomori. These as determined by Dr. Howard are *Aphelinus fuscipennis*, How., and *Aspidiotophagus citrinus*, Craw, the latter being the more numerous.

This latter parasite is the true internal parasite of the Japanese yellow orange scale. The San José scale is not a native of Japan, so it is evident that this little parasite adapts itself to the introduced variety, which is a near relative of the yellow scale upon which it is generally found.

So effective has this work of introducing beneficial insects and encouraging native parasites been, that we have practically reduced all the worst of our scale pests and very many other destructive insects below the danger line. Among the many beneficial insects which are now at work in our State, and the pests which they are at work upon, and most of which they keep in control, we name the following:

COCCINELLIDÆ.

Vedalia cardinalis, Mulsant. (Plate I, Figs. 4, 4*a*, 4*b*.) This is commonly known as the "Australian ladybird," from the fact that it was imported from Australia in order to work upon the cottony cushion scale (*Icerya purchasi*, Maskell). As stated above, this pest had obtained such a foothold in our orange orchards that the citrus industry of California was threatened. The fact that the cottony cushion scale came from Australia, where it was not a pest, was sufficient proof that there was some very efficient check at work upon it there, and investigation by Albert Koebele discovered this little beetle. The orange-growers of Los Angeles County, especially, had a very expensive experience with this scale. As it had spread into the wild bushes and trees, extermination by artificial means was out of the question. Now the scale is no longer a pest. When it appears in an orchard the owner is supplied with a colony of *Vedalia*. During the summer the transformations of this ladybird are very rapid. From the egg, through the larva and chrysalis, to the perfect beetle, takes only twenty-one days. Of course, the larvæ are the most active feeders. When short of feed, the larvæ will attack each other, but no matter how hungry they are they will not eat any other species than the cottony cushion scale. This ladybird breeds throughout the year.

Novius koebelei, Olliff (Koebele's ladybird). (Plate I, Figs. 1, 1*a*, 1*b*, 1*c*.) This is another effective enemy of the cottony cushion scale and does as good work as the *Vedalia.* The latter, however, was first introduced, and its reputation became so great that all others were overshadowed by it. The ***Novius koebelei,*** however, has proved itself equally as prolific and quite as voracious a devourer of the cottony cushion scale as its companion. This ladybird is also an introduced species, having been sent from Australia for the State Board of Horticulture by Mr. Koebele on his second trip to that country.

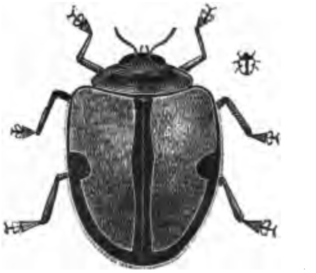


FIG. 1. Novius koebelei, male, enlarged.

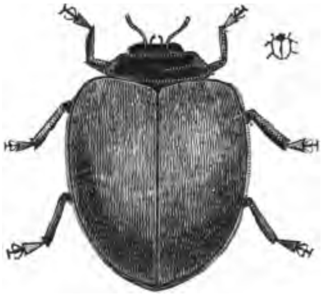


FIG. 2. Novius koebelei, female, enlarged.

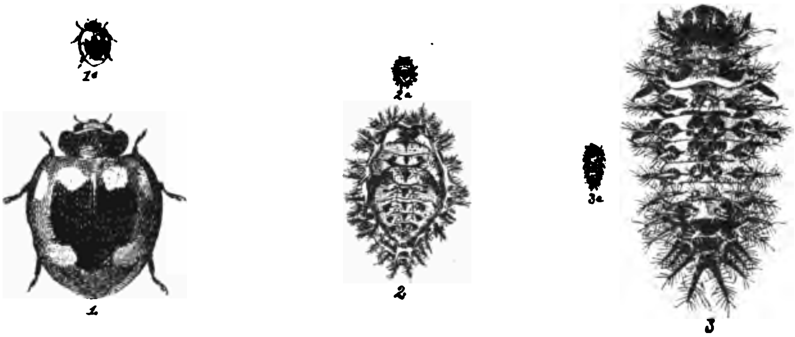
The illustrations give a good idea of this beautiful and active little ladybird. It feeds upon the cottony cushion scale (*Icerya purchasi*), searching out the solitary scales even better than the *Vedalia.* It passes through its different stages in about the same time as the latter.

Novius bellus (Beautiful ladybird). (Plate I, Fig. 3.) This is also an Australian species, having been introduced into California from that country by Mr. George Compere. It is one of the several coccinellid enemies of the cottony cushion scale, and has done very excellent work upon that pest. It has been generally distributed over the State.

Vedalia sp. (Plate I, Fig. 2.) This is an unnamed species of *Vedalia,* from its color commonly known as the "Black Vedalia." It is also an Australian species, introduced by the State Board of Horticulture through Mr. George Compere, and is another of the coccinellids which prey upon the cottony cushion scale.

Rhizobius ventralis (Black ladybird). (Plate IV, Figs. 3, 3*a*, 3*b*.) This is also an Australian ladybird, introduced by the State Board of Horticulture through Mr. Koebele, and is one of the natural enemies of the black scale (*Saisseta* [*Lecanium*] *oleæ*). This ladybird was introduced for work on the black scale, and was generally distributed by the State Board of Horticulture wherever that pest was found. It was one of the most promising of the many importations of beneficial insects and took hold of its work with a vigor that gave promise of soon extirpating one of the worst of the California scale insects. Wherever it was introduced in the coast counties of the State, it increased with wonderful rapidity and the scale as rapidly disappeared, and in those sections it still continues to do good work, but efforts to establish it in the interior counties have not met with as good success, the heat probably being too intense for the young larvæ. This insect, however, is well established all over the State, and in many sections is as abundant as any of our native species. Wherever it is abundant, it is a chief factor in keeping in check the destructive black scale.

Orcus australasia, Boisd. (Six-spotted blue ladybird). (Fig. 3.) This is one of the most beautiful of the introduced species. Like most of the latter, it is a native of Australia, and was imported from that country by the State Board of Horticulture through Mr. Koebele. It is an enemy of the black scale (*Saisseta* [*Lecanium*] *oleæ*), and is now well established in many parts of California, especially in the coast counties. The female is nearly one fourth of an inch in length, deep blue in color, with six orange red spots on the wing-covers. The male is similarly marked, but is a smaller insect. This species is a more general feeder than *O. chalybeus*. In Santa Barbara County it is bred on black scale, and in Alameda on the pernicious scale. It loves the sunshine, and is found more numerous toward the top and the outside branches of the trees in which it is established. The larvæ and pupa resemble the same stages of Pilate's ladybird.



ORCUS AUSTRALASIÆ. Boisd. (magnified); 1a. Ditto (natural size);
2 Pupa enveloped in larval skin; 2a. Ditto (natural size);
3 Larva; 3a. Ditto (natural size).

FIG. 3. Orcus australasia.

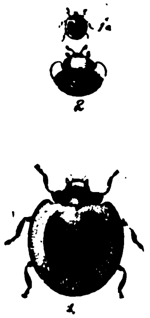
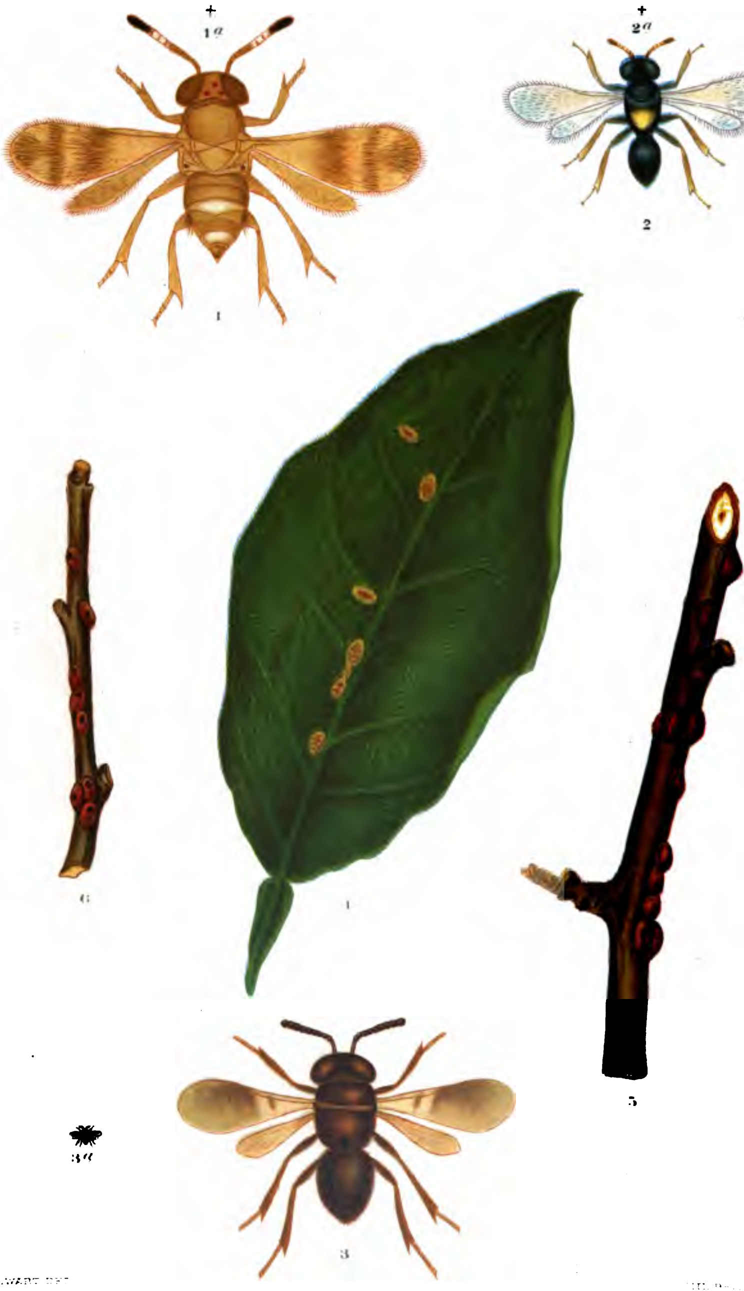


FIG. 4. Orcus chalybeus, enlarged.

Orcus chalybeus, Boisd. (Steel-blue ladybird). (Fig. 4.) So named from its brilliant steel-blue color, which makes it a conspicuous object wherever it is found. This ladybird preys largely upon the yellow scale (*Chrysomphalus* [*Aspidiotus*] *citrinus*, Coquillett), and also upon the red scale (*Chrysomphalus* [*Aspidiotus*] *aurantii*, Maskell), which it consumes in great quantities. This was

EXPLANATION OF PLATE II.

Fig. 1. *Encyrtus flavus*, Howard. Enlarged.
1*a*. *Encyrtus flavus*. Natural size.
2. *Coccophagus lecani*, Howard. Enlarged.
2*a*. *Coccophagus lecani*. Natural size.
3. *Comys fusca*, Howard. Enlarged.
3*a*. *Comys fusca*. Natural size.
4. Soft brown scale (*Coccus* [*Lecanium*] *hesperidum*, Linn.). On orange leaf.
5. Brown apricot scale (*Eulecanium* [*Lecanium*] *armeniacum*, Craw). On prune twig.
6. Brown apricot scale, showing exit holes of *Comys fusca*.



STEWART DEL.

BUG VS BUG.

THE INTERNAL PARASITES THAT HOLD IN CHECK
THE "SOFT BROWN SCALE" AND THE
"BROWN APRICOT SCALE" IN CALIFORNIA.

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CALIFORNIA

introduced into California by the State Board of Horticulture some years ago and is now found established in many parts of the State.

Rhizobius (*toowoombæ*) *lopantha.* (Plate III, Fig. 6.) This little ladybird was formerly described under the name of *Scymnus marginicollis*, but is identical with *Rhizobius lopantha.* Mr. Koebele sent this beetle about the same time that he introduced the *Vedalia*, but it was found in the State previous to that. However, it has only been within the past few years that its value has been observed. It breeds from early spring until late in the fall. As compared with the beetles the larvæ are very large, they are light colored, with a lighter oblong square on center of the back, and remain a long time in the larval stage, feeding voraciously. When about to change to the chrysalis, they hide away under cobwebs, dry leaves, and other débris. The beetle is metallic black, with a brown thorax. They feed on *Aspidiotus perniciosus*, *Chrysomphalus* (*Aspidiotus*) *aurantii*, *Chrysomphalus* (*Aspidiotus*) *citrinus*, *Aspidiotus hederæ* (*nerii*), and occasionally on aphis. In San Diego County it is proving effective on purple scale (*Lepidosaphes beckii*). In alluding to the excellent work of this little beetle on the purple scale in the above named county, Mr. Allen, of Bonita, writes:

> With us the largest hatch of purple scale has usually been in May. So far this year I have not seen a single instance of purple scale hatching, nor can I find any live scale in an orchard adjoining us, every tree of which a year ago was literally alive with them. Since last July this orchard has been to my knowledge thoroughly stocked with the *Scymnus*, though when they first entered it I can not say. As they undoubtedly came in large numbers their work has been rapid.
>
> I sprayed only a small part of the ranch last summer, and there can be no question but that, except for the work of this parasite, our place would be teeming with the purple scale, whereas I have yet to see the first live one, and our fruit, from trees that used to be infested, is now coming off the tree clean. I believe this ladybird is also eating the yellow scale, because there is so much less of it on the fruit, but of this I am not yet sure.
>
> By September the efficiency of the purple scale parasite should be thoroughly established, for if any live eggs are left they must hatch before that time; yet even now it seems to me that the work of the *Scymnus* is second only to that of the *Vedalia*, and, considering the difference of the scales and the fact that the purple is so heavily armored, its work seems even more remarkable.

Scymnus vagans. This is one of the smallest of the ladybird family, but not one of the least important. It is an enemy of the red spider, a pest which is very general all over the world, and especially detrimental to almonds, prunes, and citrus trees. The long, dry seasons of California are favorable to the spread of this pest, which flourishes under arid conditions, and which has been especially troublesome here.

This little ladybird was introduced from Australia by Mr. George Compere for the State Board of Horticulture. It was found to be very effective in checking the spread of the pest, and has been generally established in California.

Rhizobius debelis. This is another one of the introduced species of ladybirds which we owe to Australia. It is a scale-feeder and has been very generally distributed in the State.

Cryptolæmus montrouzeri. (Fig. 5.) This is another of the Australian coccinellidæ. It is the natural enemy of the mealy bug (*Pseudococcus* [*Dactylopius*]). It has been introduced into the Hawaiian Islands, where this pest was so bad in the coffee plantations as to almost threaten the total destruction of the crop, and it has done such good work that the pest has been practically cleaned out. Successful efforts have also been made to establish it in the coffee plantations of Central America, where the mealy bug has also appeared in destructive numbers.

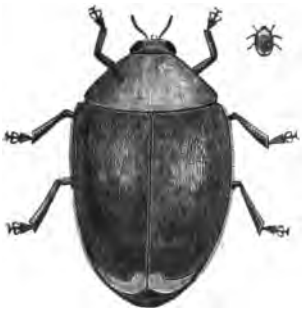


FIG. 5. Cryptolæmus montrouzeri, enlarged.

Hyperaspis lateralis, Mulsant. This is one of our native ladybirds and is very generally distributed over the State. It is a small, black ladybird, with two reddish-yellow spots on the elytra, near the apex, two spots on the disc, and two blotches of the same color on the forward lateral margins. Forehead and edge of thorax yellow. Feeds on pernicious scale in the adult form. Cypress trees (*Cupressus macrocarpa*) in the suburbs of San Francisco that were seriously infested with the cypress mealy bug (*Pseudococcus* [*Dactylopius*] *ryani*) were cleared of the pest by this ladybird. The larvæ of this species are covered with a cottony secretion and resemble mealy bugs.

Exochomus pilati, Mulsant. (Fig. 6.) This is another of our very common native ladybirds. It resembles in general appearance the twice-stabbed ladybird (*Chilocorus* [*bivulnerus*] *fraternus*), but is much larger. It also differs from the latter in having the under side of the extremity of the abdomen black, instead of red. The larvæ resemble the twice-stabbed, but are larger and lighter-colored. Both the larva and beetle feed upon young black scale, but they do not increase very rapidly.

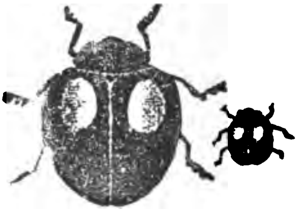


FIG. 6. Exochomus pilati.

Chilocorus (*bivulnerus*) *fraternus* (Twice-stabbed ladybird). (Plate III, Figs. 3, 3*a*.) This is one of our most important native ladybirds. The larvæ are most voracious, and destroy great numbers of young black, pernicious, and other scales. The young are long and covered with dark spines, crossed with a yellowish band near the middle. When about to change into the pupa or chrysalis, the larva selects the under side of the large branches, where it attaches itself with a gummy substance to the bark, head downward. In a few days the spiny, larval skin splits longitudinally, exposing the inclosed chrysalis. When the beetle issues from the chrysalis it has a black head, with white wing-covers; in a short time this changes to a shiny black, with a red spot on each elytra. In this stage it also preys upon scale insects.

Coccinella sanguinea, Linn. (Blood-red ladybird). This is a medium-sized native species, found very generally distributed over California. It feeds upon aphids and young scale insects, but is not so common as some of the other species, and is not, therefore, so beneficial. The beetle is of a solid color, varying in intensity from a dull red to a bright scarlet.

Coccinella californica, Mann. This species is a very common one in this State, and the beetles are sometimes found in enormous numbers. They are very social in their habits, and can sometimes be found in such numbers as to be gathered by quarts. They are larger than the *sanguinea*. The elytra are orange-red, without spots or markings; thorax is black, with a light spot on each side. They feed principally on aphids. Like other species of ladybirds, the larvæ do the most good.

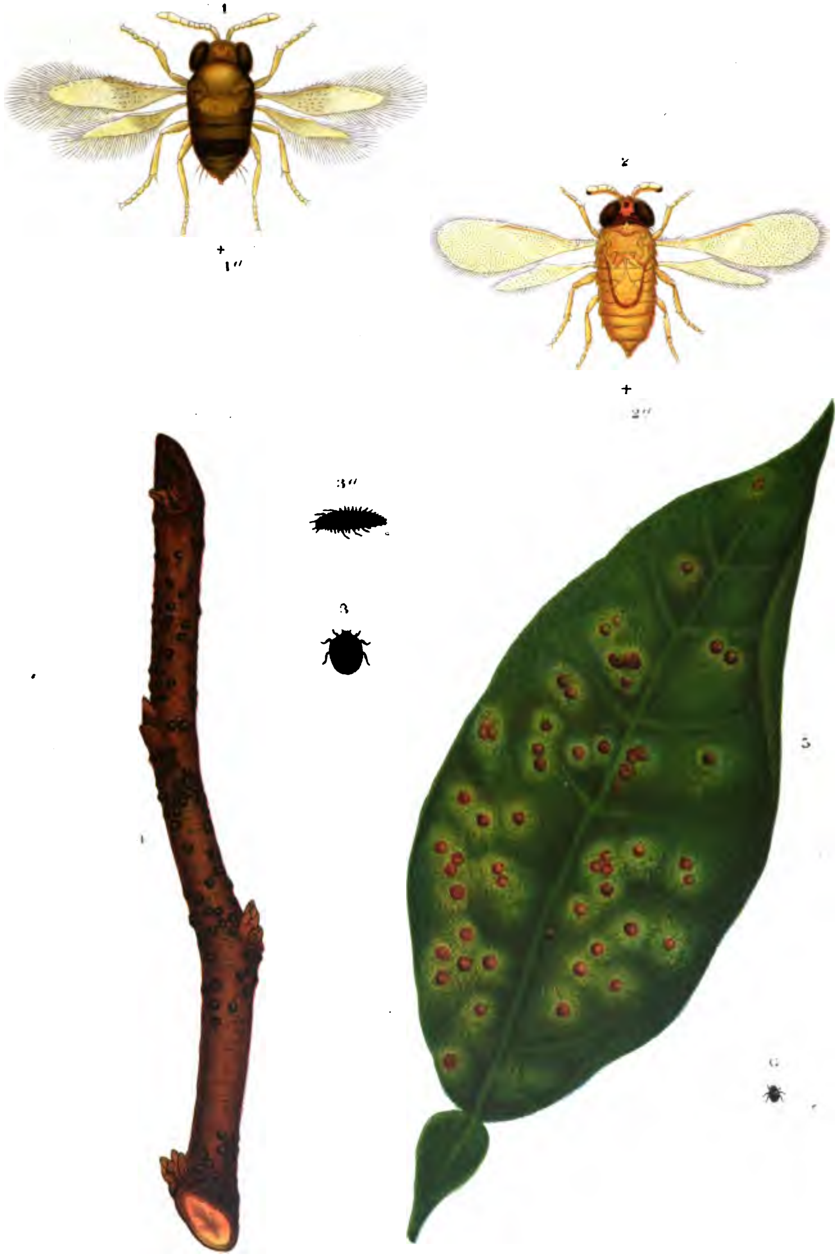
Coccinella abdominalis, Say. This is known as the "ashy gray ladybird," from its prevailing color. This ladybird is hemispherical in form, ashy gray in color; with seven small black spots on the thorax and eight on each wing-cover. It is said to be one form of *Coccinella oculata*, Say. It is an aphis-feeder, and where it exists in quantity does good work.

Coccinella oculata, Say (Eyed ladybird). This, while it is supposed to be one form of the preceding, does not resemble it in any manner, in its markings or general appearance. The adult insect is deep black in color, with two distinct orange-red spots on the wing-covers, and might easily be mistaken for *Chilocorus fraternus*. There is a distinct difference in these two insects in the markings of the thorax, the *oculata* being light yellow on the under side and around the margin of the thorax. Like its other form, *abdominalis*, it is an aphis-feeder, and a very effective one where it is found; but in this form it is not a common insect in this State.

Hippodamia ambigua, Le Conte. (Figs. 7, 8, 9.) This is a very abundant native species. The adult beetle resembles the blood-red ladybird somewhat, but is narrower in proportion to its length, and flatter. It is distributed over the whole State, and is often found in

EXPLANATION OF PLATE III.

Fig. 1. *Aspidiotophagus citrinus*, Craw. Enlarged.
1*a*. *Aspidiotophagus citrinus*. Natural size.
2. *Aphelinus fuscipennis*, Howard. Enlarged.
2*a*. *Aphelinus fuscipennis*. Natural size.
3. *Chilocorus bivulnerus*; "twice-stabbed ladybird." Natural size.
3*a*. *Chilocorus bivulnerus*. Larva. Natural size.
4. San José scale (*Aspidiotus perniciosus*, Comstock). Natural size. On pear twig.
5. Yellow scale (*Aspidiotus citrinus*, Coquillett). Natural size. On orange leaf.
6. *Rhizobius* (*toowoombæ*) *lopantha*. Natural size.



WAHL DEL.

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BUG VS BUG.

THE FOUR SPECIES OF INSECTS THAT SUBDUED THE
"SAN JOSE SCALE" AND "YELLOW SCALE"
IN CALIFORNIA.

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great numbers. It is an aphis enemy, and does excellent work on the plum, apple, and woolly aphis. During the later fall months these insects may often be found in sheltered places in great masses, in which condition they hibernate during the colder months.

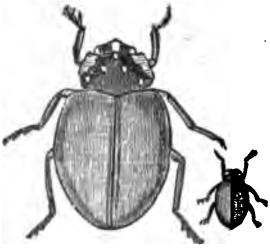


FIG. 7. Hippodamia ambigua, enlarged.

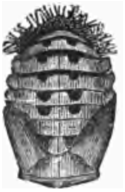


FIG. 8. Hippodamia ambigua, pupa.

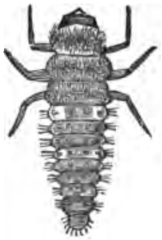


FIG. 9. Hippodamia ambigua, larva.

Hippodamia convergens, Guer. This is another of the common ladybirds of California, and is found throughout the State during the summer months very plentifully, among corn and other vegetables. The larvæ feed upon aphids and other insects, while the mature insects also feed upon aphids, young scale, etc. The beetles vary somewhat in color; some are of a deep red, while others are of a dull brown, the markings, however, being uniform. Sometimes after ripe fruit has been punctured by birds or other agencies, the beetles of this species will be found upon it, sipping the moisture, and on this account they have been thought sometimes to be injurious. They are, however, among the most important of our insect friends.

HYMENOPTERA.

Scutellista cyanea, Motsch. (Plate IV, Figs. 1, 1*a*, 1*b*, 1*c*.) This is comparatively a new introduction to our State, having been secured from South Africa, where it was found to be a very effective worker on the black scale (*Saisseta oleæ*). In the short time it has been established among us, it has done most remarkable work, and, so far, promises to be as efficient a check for the black scale as the *Vedalia* has been on the cottony cushion scale. Of its introduction, Mr. Craw writes:

> It was not until Prof. Charles P. Lounsbury, Government Entomologist of Cape Colony, called attention to the *Scutellista cyanea* as an efficient enemy of the black scale in that country, that its true value was recognized
>
> Through the efforts of the Hon. S. F. Lieb, of San Jose, and Mr. Ed. M. Ehrhorn, of Mountain View, Senator Perkins appealed to the United States Department of Agriculture to use its good offices toward securing this valuable insect. Several colonies were forwarded to Mr Ehrhorn, but, unfortunately, without any practical results from either sending. On October 1, 1901, Professor Lounsbury wrote me:
>
> "By to-morrow's boat we start you two boxes containing cuttings of oleander bearing parasitized scale. It is not ideal material by any means, and this is not the season we most wish to send in, but the scale and its parasites are both so scarce that we must send what we find as soon as we find it. Most of the scale in your vicinity will be old

by the time this reaches you, but I am in hopes that you may be able to get material from the south of the State that will take a generation of the parasite. Owing to the probable presence of secondary parasites, it is, of course, inadvisable to send the original material to any orchardist down there."

From this sending, seventeen perfect insects developed, of which four were females. When placed in a breeding case, a small spider that was hidden in a rolled-up leaf seized and killed one of the females, leaving us but three from which to colonize the State.

On December 26, 1901, I examined a full-grown black scale from the tree in the breeding case, and found a small maggot of the *Scutellista cyanea*, about twice the size of a black scale egg. This convinced me that they were breeding, so no further examination was made. On February 7, 1902, the parasites began to issue from the scales. During the warm summer months we found that the *Scutellista* passed through all its metamorphoses in forty-seven days.

Colonies have been sent to all the counties of the State where black scale has been troublesome. From personal examination and from material sent in, it is evident that the parasites have obtained a good start, and the coming season will, we hope, see them thoroughly disseminated.

Description: In the female, the antennæ are reddish-brown, with the ring joints and hips dark and more spreading than in the male. The antennæ of the male are black from the ring joints to and including the clubs, with the scape reddish-brown; the legs in both sexes are black, tarsi reddish-brown, and claws black; the scutellum in both male and female is very large. As the flies are small and very active, it is difficult to detect them on the tree upon which they may be placed, and the best way to determine if they are established, is to remove and examine the inside of the full-grown scales about forty to forty-five days after liberating the parasites. The larva is maggot-shaped and white, this soon changing to the pupa, which is black just before changing to the perfect fly.

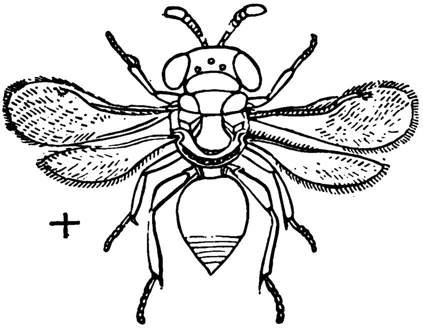


FIG. 10. Tomocera californica, male, greatly enlarged.

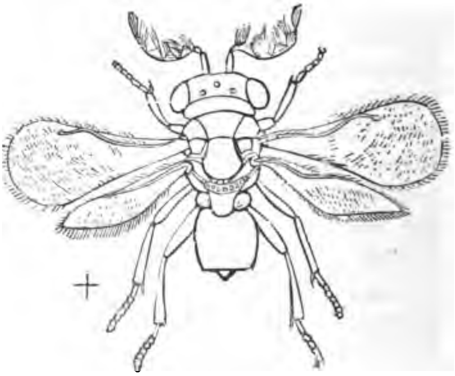


FIG. 11. Tomocera californica, female, greatly enlarged.

Tomocera (*Dilophogaster*) *californica*, Howard. (Figs. 10, 11.) This is one of our native internal parasites. It has been one of the most effective checks of the black scale in the State, but was not able to keep this pest wholly under control. In a report on scale insects and their parasites, Professor Comstock says of this insect:

> This is one of the most interesting parasites, both structurally and economically, which we have discussed in this paper. It lives upon the destructive black scale, and so abundant is it in certain regions that upon more than one tree, at least seventy-five per cent of the scales appeared to be parasitized. In no locality was the black scale found without this attendant destroyer.
>
> The female parasite pierces the body of the female bark-louse and deposits probably but a single egg. At all events but a single parasitic larva has ever been found upon a single scale. The larva of the parasite feeds upon the eggs and the young of the *Lecanium*, and, also, later upon the mother herself. When full grown it is about 0.15 inch long, broad, spindle-shaped, somewhat more pointed at the anterior than at the posterior end of the body. Its color is clear white, the contents of the alimentary canal, however, often showing through and giving it a blackish tinge. This larva transforms to a whitish pupa, which soon turns black. The adult parasite makes its exit through a round hole which it cuts in the back of the scale.

Hymencyrtus crawii, Ashmead. This is an Australian insect, and is one of the very effective internal parasites of the black scale in that country. It was introduced into California by Mr. George Compere, and has been reported as doing very good work in the districts where it has become established.

Aspidiotophagus citrinus, Craw. (Plate III, Figs. 1, 1*a*. See Fig. 12.) The internal parasite of the yellow scale (*Chrysomphalus* [*Aspidiotus*] *citrinus*) and the San José scale (*Aspidiotus perniciosus*). The former scale was at one time as great a source of trouble to the orange-growers of southern California as the red scale (*Chrysomphalus* [*Aspidiotus*] *aurantii*) is now. It fairly covered the citrus trees, reduced the quantity of fruit, and destroyed its quality. Every effort was made by artificial means to resist its attacks, but these were unavailing. Finally it was discovered that there was some natural check at work, and investigation discovered this little internal parasite. Instructions were at once given to the orange-growers to stop spraying for the yellow scale and to give this little friend a chance to increase. This advice was followed, and in a very short time the yellow scale disappeared from that section and it has not since been regarded as a pest, although no other means have been taken to check it. Mr. Craw has bred this parasite from yellow scale upon imported trees from Japan. Mr. Marlatt bred it in numbers from San José scale in Japan. It is also one of our best checks for the same scale in California.

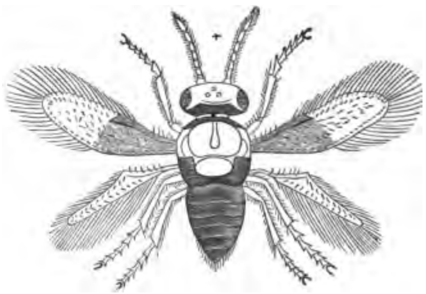
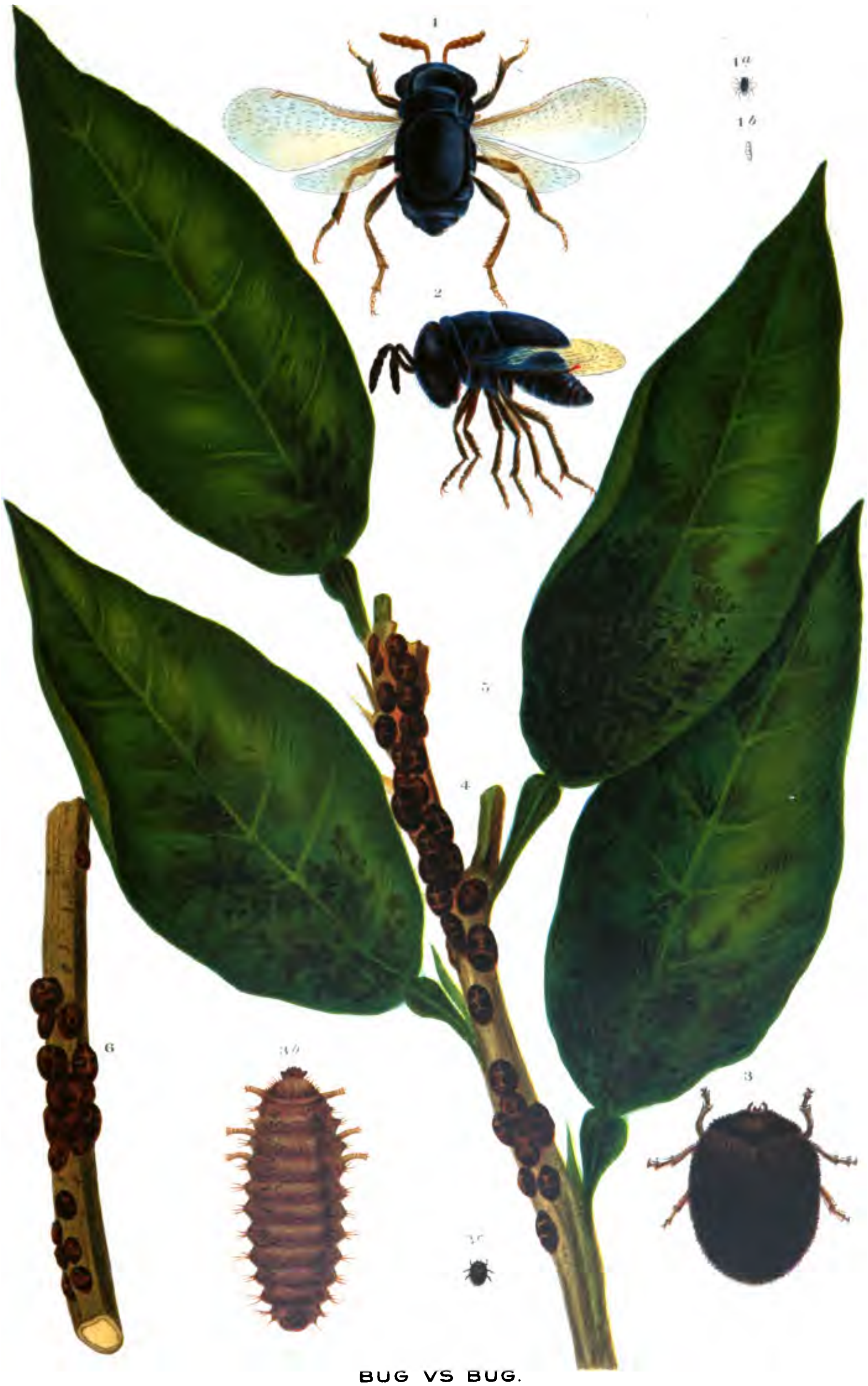


FIG. 12. Aspidiotophagus critinus, greatly enlarged.

EXPLANATION OF PLATE IV.

Fig. 1. *Scutellista cyanea*, Motsch. Female; enlarged.
1*a*. *Scutellista cyanea*. Natural size.
1*b*. *Scutellista cyanea*. Larva; natural size.
2. *Scutellista cyanea*. Male; enlarged.
3. *Rhizobius ventralis*, Blackburn. Black ladybird; enlarged.
3*a*. *Rhizobius ventralis*. Natural size.
3*b*. *Rhizobius ventralis*. Larva; enlarged.
4. "Black Scale" (*Saisseta* [*Lecanium*] *oleæ*, Bern). On orange twig.
5. "Black smut"; fungus, existing on exudation of black scale.
6. "Black scale," showing exit holes of *Scutellista cyanea*.



BUG VS BUG.

THE TRUE PARASITE AND ENEMY
OF THE
"BLACK SCALE.

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Aphelinus fuscipennis, Howard. (Plate III, Figs. 2, 2*a*.) It is well within the memory of the fruit-growers of California when the San José scale was the most terrible of our pests. It antedated the appearance of the cottony cushion scale and attacked nearly all of our deciduous fruit trees. For some time it seemed as though the fruit industry of our State were doomed, at least such varieties as were attacked by this pest, and orchardists were digging out and destroying their trees by thousands in order to stay its ravages. Various compounds were devised to fight it; among them the now celebrated wash of salt, sulphur, and lime was discovered as most effective. This wash is still the best known artificial remedy for San José and kindred scales on deciduous trees; but it is impossible with the greatest care to destroy any kind of pest by artificial means. There are always solitary trees which will be neglected, careless people who refuse to spray, wild shrubbery out of reach of the operators, and all of these become sources of infection. While active and efficient work was being done by artificial means against this pest, it was discovered to be disappearing in sections where no spraying was done, and investigation showed that one of our native parasites, the *Aphelinus fuscipennis*, had adapted its taste to it and was rapidly getting it under. To-day, wherever the San José scale is found we also find its parasite, and while the pest has not, and never will disappear, it is entirely controlled by its little enemy until we pay no further attention to it. Spraying is still carried on, however, as it has been found beneficial to our fruit trees in killing of other pests, preventing fungous diseases, and keeping the trees healthy; but so far as the San José scale is concerned, there is no further need of artificial remedies.

This same parasite is generally distributed all over the United States and is undoubtedly doing good work, as shown in our quotation from Prof. W. G. Johnson of Maryland, but the long winters and comparatively short summers there may check its spread. In the mild winters and long summers of California it probably has more broods than there, and, increasing in greater quantity, it is enabled to do more effective work.

Pteromalus puparum. This is a very common enemy of the cabbage butterfly (*Pieris rapæ*) in this State, and undoubtedly to its work is due the fact that this pest is not more common than it is. This parasite has a wide range and is found over the greater part of the United States. It is parasitic upon the pupa of the butterfly, upon which it lays a number of its eggs, which, hatching out in its unfortunate victim, puts an end to its career. Prof. F. M. Webster in "Insect Life" gives an interesting account of the operations of this insect, as follows:

> On the morning of August 9th, we observed a larva of *Pieris protodice*, Boids., in the act of transforming to the chrysalis. Near by, and very evidently watching this transformation, were a male and female of this parasite. The trio were observed several times during the early part of the day, the parasites always on guard, as it were,

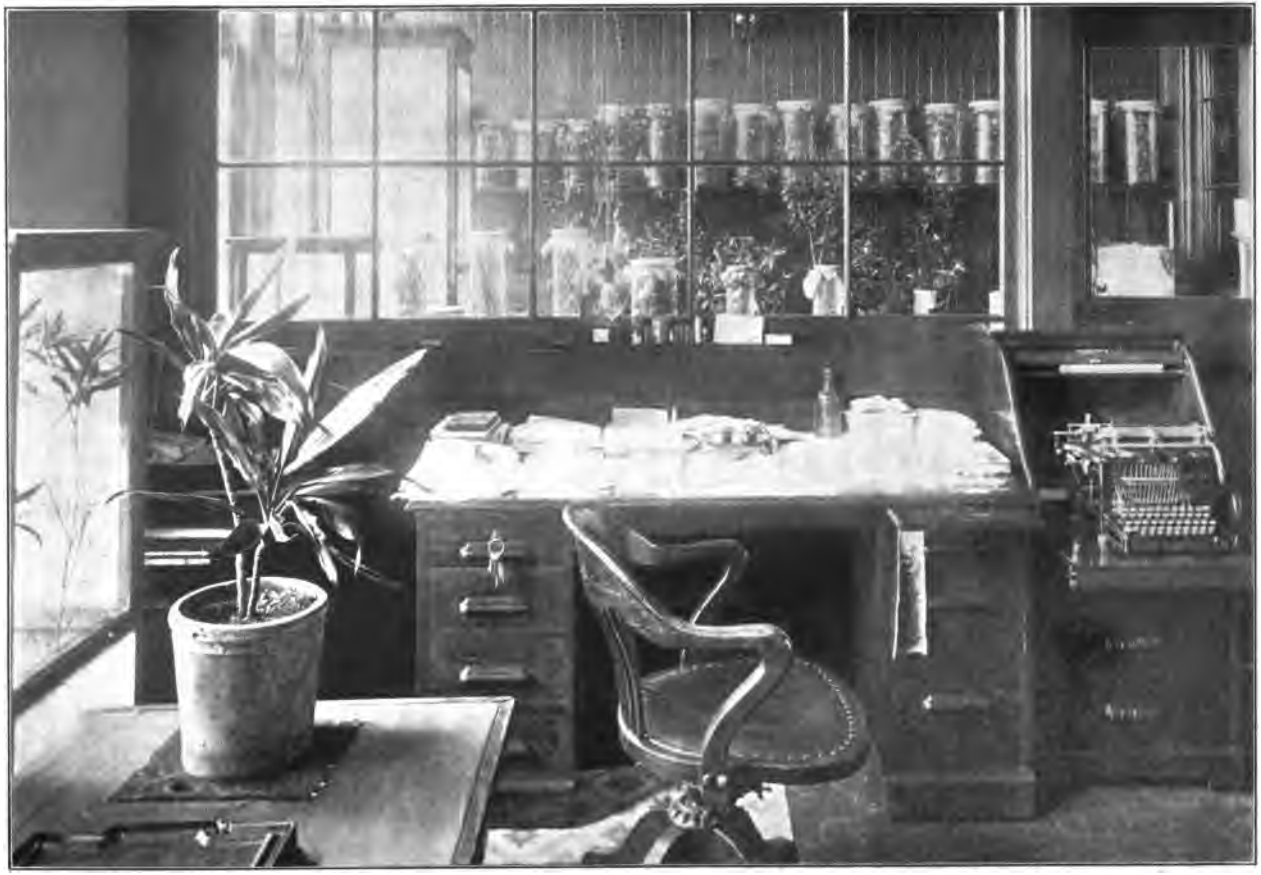


PLATE V. Office of the Horticultural Commission in San Francisco, showing insectary and breeding-jars in the background.

although the females several times were observed to attempt oviposition, in every case, however, being deterred from so doing by the jerking of the larva, now in a semi-pupal state. During one of these visits the male was driven away, but soon returned. About 6 P. M., the last observation of the day, the transformation of the larva, while not complete, had so far advanced as to prevent the radical movements which had characterized its struggles during the forenoon, and the female was busily engaged in her work of oviposition, the male still present as a spectator (?). On the morning of the 10th, the chrysalis, now fully developed, was removed and placed in a glass jar, awaiting further developments. On the morning of the 27th, seventeen days after, the adult *Pteromalus* were observed issuing from the chrysalis in great numbers. After all had emerged, they were counted and found to number 68 males and 4 females. The same parasite had been reared from a similar chrysalis on August 13th, but the individuals were not counted.

Comys fusca, Howard. (Plate II, Figs. 3, 3*a*.) This is one of the most effective of the scale parasites in our State. Its efforts are principally directed to keeping down the brown apricot scale (*Eulecanium* [*Lecanium*] *armeniacum*, Craw), and wherever it has become thoroughly established, it has accomplished this object in very good style. The brown apricot scale has been one of the most serious scale pests of the State, frequently covering the twigs of apricot, plum, and prune trees with an almost solid incrustation, destroying the vitality of the trees, ruining the fruit, and doing incalculable damage. By means of this little internal parasite, however, we are enabled to keep the pest well under control, and whenever there is an outbreak of the scale, colonies of the parasite are sent and soon become established. The parasites are small, and their capture and shipment require great care. The method in which this is done is by noting an orchard in which the insects are well established the preceding season. From this orchard large quantities of infested twigs are secured about the middle of May, or before the parasites begin to emerge from the scale. These are carefully trimmed of all leaves to prevent mildewing, and then placed in square, wooden receptacles or boxes, as shown in the illustration (Plate VIII). These boxes are bored with a number of half-inch holes in the upper half and all light elsewhere excluded. Into these holes small vials are fitted, with the mouths inward. The insects, as they emerge from the scales, seek the light and enter the vials placed to receive them and when there are enough in any one to form a colony of sufficient size, usually from twenty-five insects up, the vial is removed, stopped with a little cotton wool to prevent their escape and yet admit air, another vial is set, and the process is repeated. The vials are then carefully packed in stiff paper tubes (see Plate IX) and mailed to all sections where there have been any reports of outbreaks of the scale. In this manner, beneficial insects are distributed by tens of thousands all over the State and nature is aided in her efforts to keep our insect enemies within proper limits.

Encyrtus flavus, Howard. (Plate II, Figs. 1, 1*a*.) This is one of several internal parasites of the soft brown scale (*Coccus* [*Lecanium*]

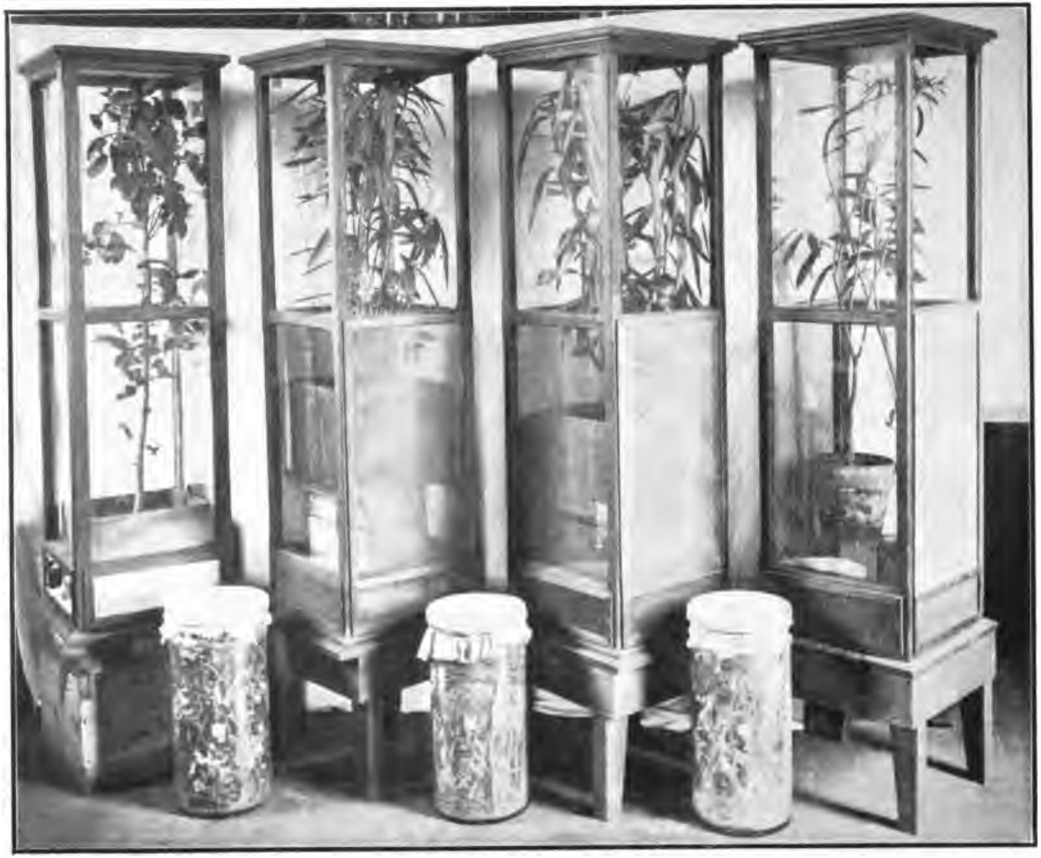


PLATE VI. Breeding-cases for beneficial insects, in San Francisco office.

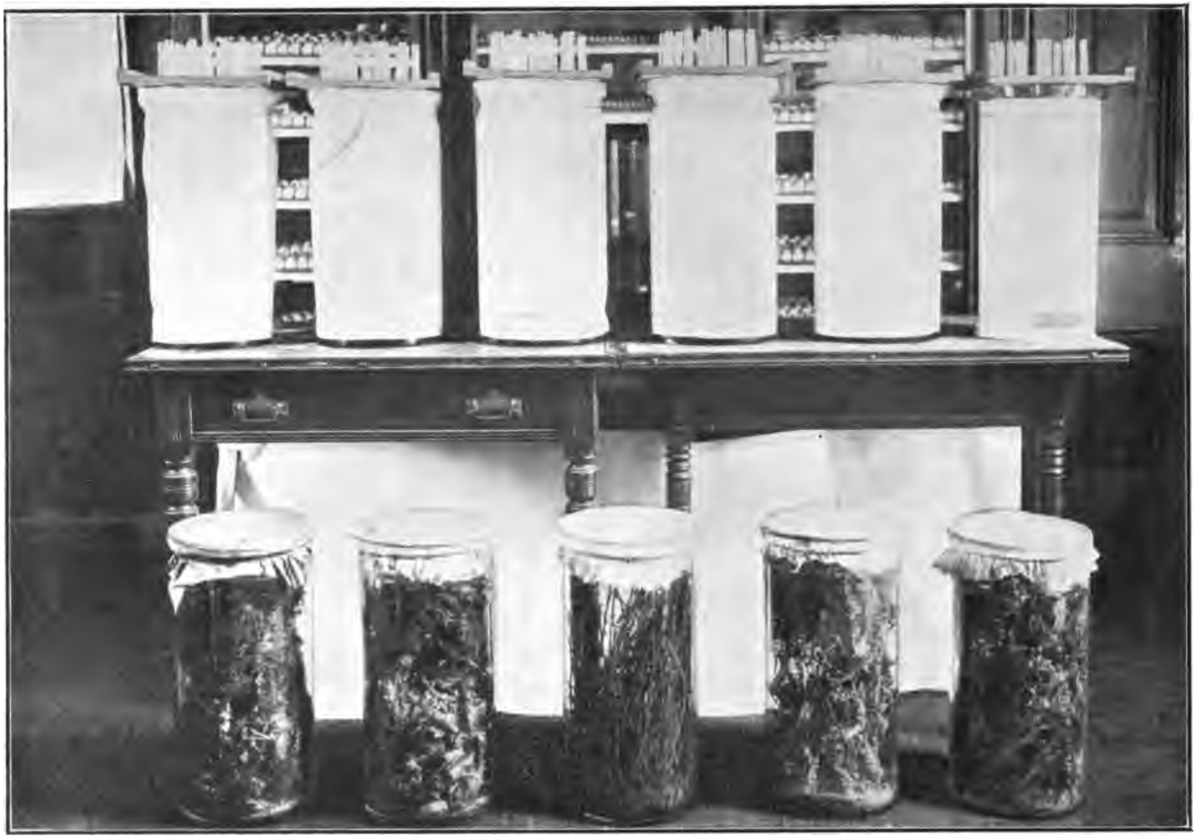


PLATE VII. Insect breeding-jars, showing method of breeding and capturing beneficial insects for shipment.

hesperidum). This scale was another of the very serious pests which the orange-growers of California had to contend with and from which they have been relieved by insect aids. When orange-growing was in its infancy, the soft brown scale obtained a foothold in the orchards, and without any check soon spread. In a short time, the trees were covered with it and were suffering greatly from its depredations. In a comparatively short time, however, it began to disappear, and investigation showed that several internal parasites, among which the *Encyrtus flavus* was one of the most important, were actively at work upon it, and reducing it below the danger limit.

Coccophagus lecani. (Plate II, Figs. 2, 2*a*.) This is another of the internal parasites of the soft brown scale (*Coccus hesperidum*). It is found in several of the *Lecaniums*, but its best work in this State has been on the soft brown scale of the orange, which, in connection with *Encyrtus flavus*, it has kept below the danger limit.

Coccophoctonus sp. This is an internal parasite of both the yellow and red scales, and while it has not done as extensive work as some of the other parasites above described, it is none the less an important addition to our list of friendly insects.

Eupelmus mirabilis, Walsh. This is an egg parasite of the katydid (*Microcentrim retinervis*, Scudder). The female insect lays her eggs within those of the katydid. The young parasite is hatched and at once proceeds to eat the eggs of the host insect. The *Eupelmus mirabilis* has been an invaluable friend to the orchardists of California and especially to those engaged in orange-growing, where at one time the katydid was an annoying and destructive pest. It is now rather a rare insect in those sections where it was once so common, and it is difficult to find its eggs without observing that they have been perforated and destroyed by this parasite.

Besides the above-named insects which are common in California, and to which without doubt we owe our position as a fruit-producing State, there are a number of others of greater or less importance, among them a species of *Braconid*, parasitic on cutworms; *Anastatus*, an egg parasite of the tent caterpillar, and another parasite of the tent caterpillar eggs. There is also a Tachnid fly which destroys the cabbage butterfly by laying its eggs on the victim, the young larva hatched from which eats up the caterpillar and destroys it. There is also an internal parasite of the *Eulecanium* (*Lecanium*) *robinarum*, Douglas, and a species of *Aphelinus* working as an internal parasite of the aphis.

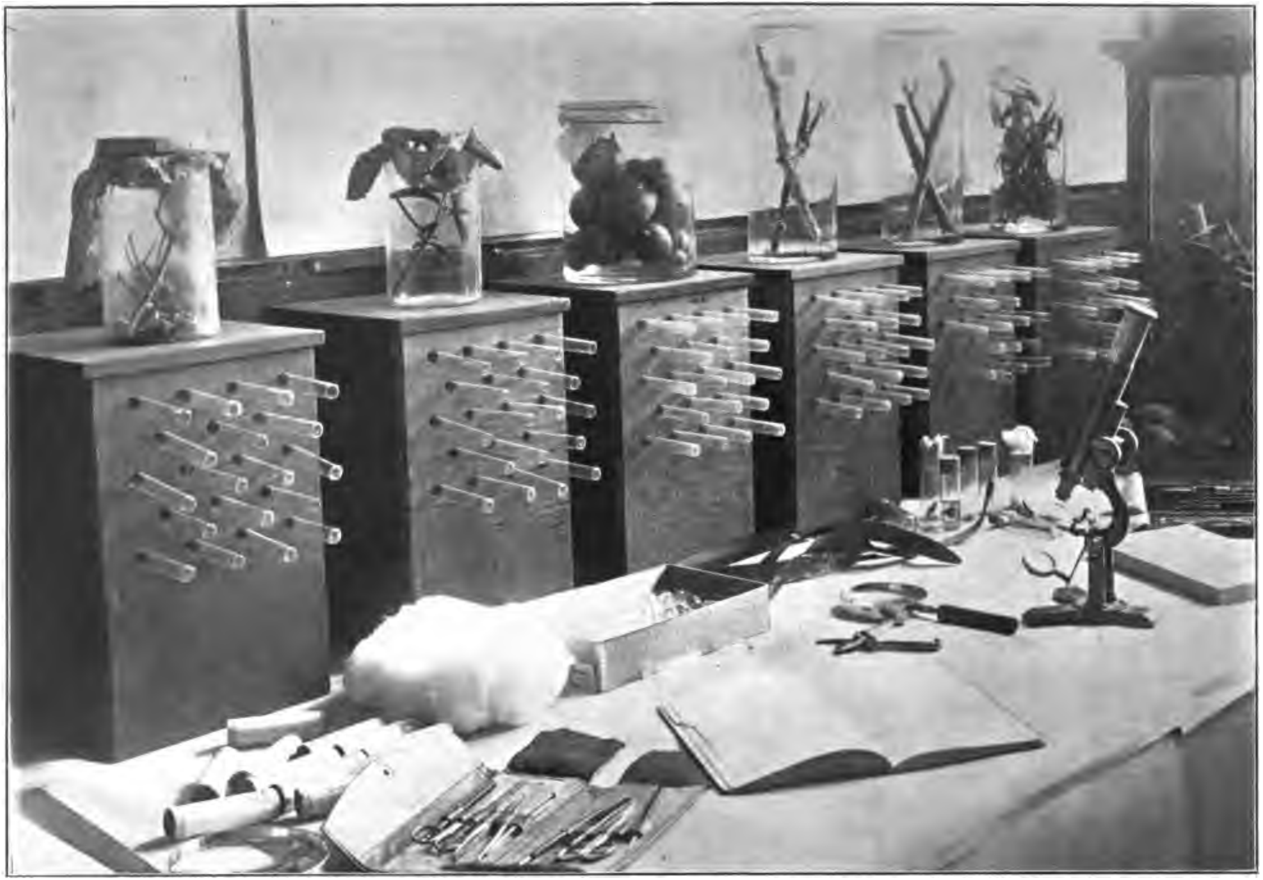


PLATE VIII. Trap boxes, showing method of catching beneficial insects for transportation. Scale-infested twigs, containing the parasites, are placed in the boxes, and as the insects hatch they work to the light shown in the tubes and are captured without being handled.

DIPTEROUS INSECTS.

In the great family of dipterous or two-winged flies, we find very many of our worst pests; among them the many fruit flies, which do so much damage by laying their eggs in the ripening fruit, and which hatching out into a mass of crawling maggots render it wholly unfit for use; but at the same time this order gives us very many of our best friends, and prominent among them are the following:

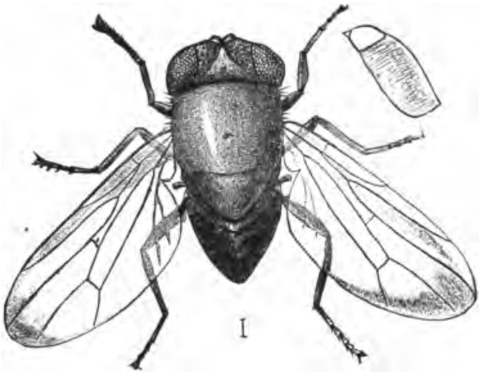
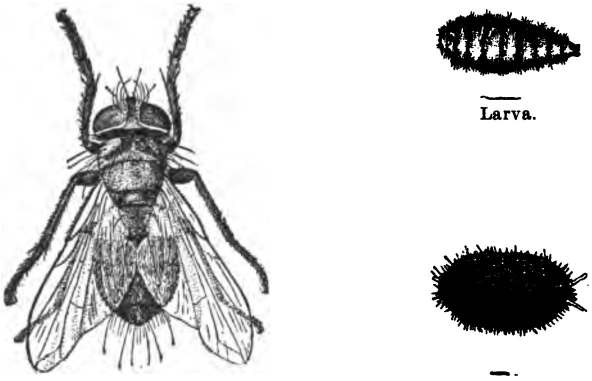


FIG. 13. Lestophonus icerya, enlarged.

Lestophonus icerya. (Plate I, Figs. 5, 5*a*; also Fig. 13.) This is an exceedingly small, two-winged fly, which was found at work on the cottony cushion scale at Sidney, N. S. W., by Albert Koebele. It is now thoroughly established all over California wherever the cottony cushion scale is found, and has proved itself a valuable auxiliary to the *Vedalia cardinalis* in keeping that pest in check.

Celatoria crawii, Coquillett. (Fig. 14.) This is another of our beneficial flies, being an internal parasite of the well-known twelve-spotted squash beetle, so common in fruit-growing districts, and is one of the rare instances that have been recorded of a beetle being destroyed by the larvæ of a fly. It is not only interesting to an entomologist, but is of great assistance to the horticulturist in reducing the numbers of such



Larva.

Female, enlarged.

Pupa.

FIG. 14. Celatoria crawii, Coquillett.

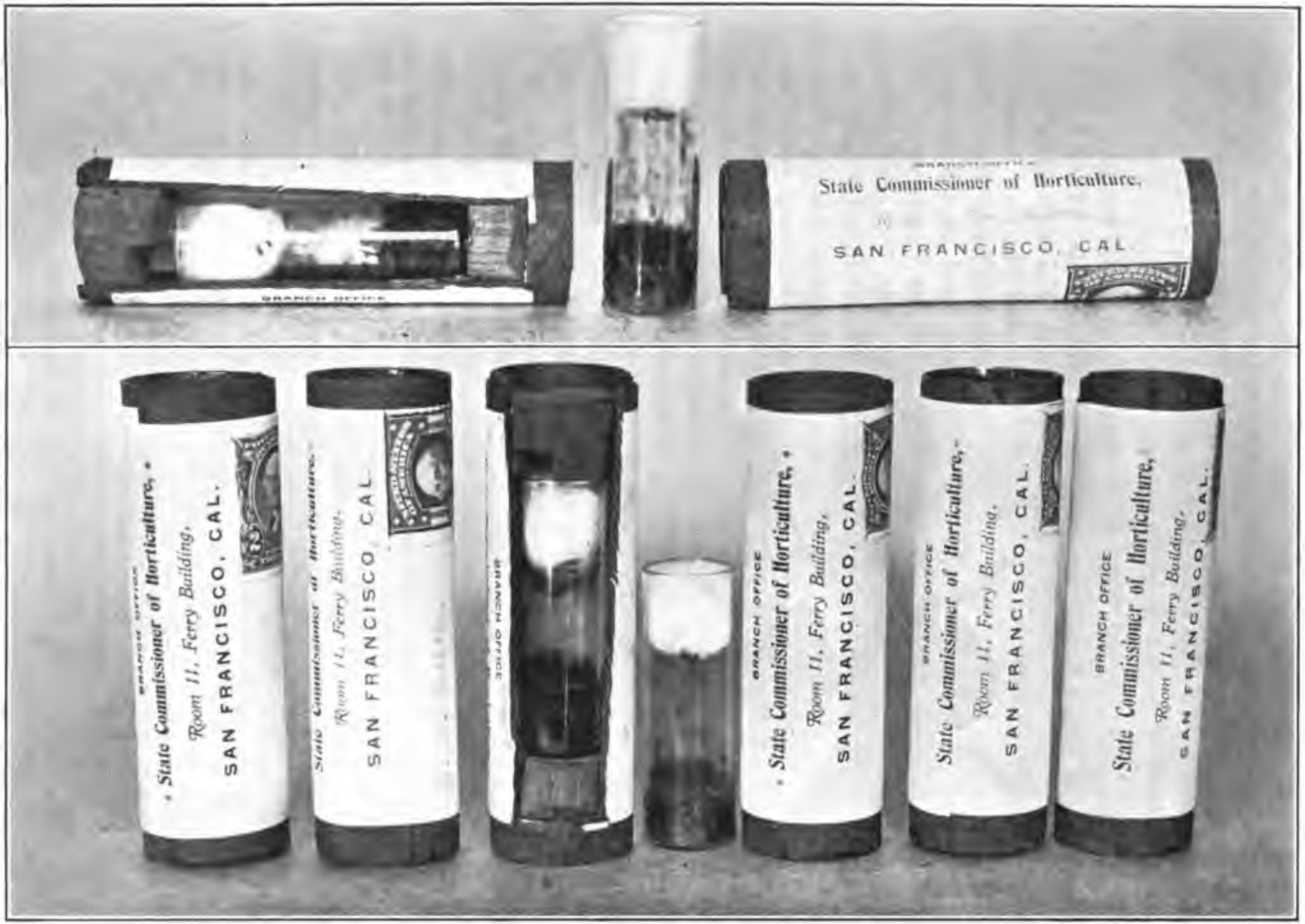


PLATE IX. Beneficial insects ready for mailing. Showing a section of one tube removed to illustrate method of packing.

a serious pest. Mr. Craw discovered this parasite in the neighborhood of Los Angeles, where he collected a large number of the beetles, and found that fully one third were parasitized. He found them in the larval state in the beetles as early as May and as late as the middle of October. The May brood pupate early in June and remain in this condition about two weeks, when they change to the winged form. They are numerous in July and August.

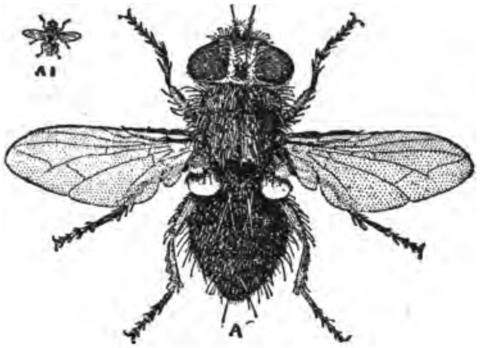


FIG. 15. Masicera pachytyli, Sk., parasite of the locust.

Masicera pachytyli, Sk. (Fig. 15.) This is one of the Tachnid flies, the whole of which family are parasitic on other insects. They are of medium size generally, and to a casual observer resemble our common house flies. The favorite food of the greater part of the members of the family are the caterpillars. The female lays her eggs on the soft bodies of the caterpillars and the young grubs devour their host, which never attains its mature state. It is to this family that the reduction of moths and butterflies below the danger limit is due. The one of which we give an illustration in Fig. 15 is parasitic on the locust, and unquestionably does much toward keeping this terrible pest in check in Australia, where it is native. This is one of the introduced species and has been established in our State. Mr. A. H. Bray gives his observations on this insect, as follows:

> The grub, or larva, is found within the locust, where it appears to live upon the adipose tissues of the victim, avoiding the vital parts with unfailing instinct. The grub lives indifferently in the thoracic region or the abdomen of the locust, and frequently three or four may be found in a single grasshopper.
>
> The grubs leave their victims when they are full grown, usually by means of an opening which they eat in the side of the locust at the point where the abdomen joins the metathorax; but they do not invariably make their exit from the body of the unwilling host at that particular place, as on one occasion I observed two grubs escaping from a grasshopper at the same time—one from between the first and second abdominal segments, and the other from between the head and prothorax. As soon as the grub makes its escape, the grasshopper, which has gradually grown more and more feeble as the inclosed parasite has gained in size, dies. In several instances I have observed that the grasshopper died before its enemy succeeded in making its escape; and in one case a larva was seen vainly struggling to free itself from between the metathorax and the abdomen of a dead grasshopper, where it was firmly held by the contracting remains of its victim. The grub, which subsequently died without extricating itself, succeeded in freeing more than half its body, but it was firmly held by the tail.

The *Syriphidæ*, or syrphus flies (Figs. 16, 17, and 18), are another large family of dipterous insects, many of which are beneficial to man.

They are usually very conspicuous from size, color, and markings and very many of them resemble other insects and may be mistaken for bees, wasps, etc. They are often seen in sunny weather poising almost motionless on the wing, especially over flower-beds, occasionally darting on their prey. The larva of the syrphus flies is of great benefit in destroying all kinds of aphids. It is quite blind, but the egg from which it hatches is deposited by the parent fly in the midst of a colony of plant aphids, where it gropes about and obtains an abundance of food without much trouble. The larva is fleshy, thick and blunt behind, and pointed in front. Its mouth is furnished with a triple-pointed dart, with which it seizes and pierces its prey, and, elevating it as shown in the figure, deliberately sucks it dry.

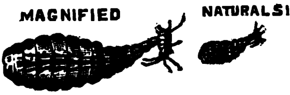


FIG. 16. Larva of Syrphus Fly.

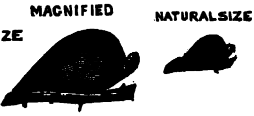


FIG. 17. Pupa of Syrphus Fly.

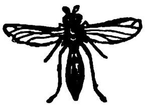


FIG. 18. Syrphus Fly.

This is but a partial list of the very many insect friends which are doing so much for California horticulture, and which it has been the policy of the State Board of Horticulture and the State Horticultural Commissioner to foster and encourage to the widest extent, and at the same time to add to their numbers all beneficial insects which can be secured from any part of the world. To this end correspondence is carried on with entomologists in different parts of the world, while agents of this department are dispatched to discover and introduce beneficial species wherever they can be found. It is the policy of this State to use artificial remedies so long as there are no better ones, but to secure, introduce, and distribute the better means, and these consist of beneficial insects, as soon as possible. In California, at least, this plan has been found a very effective and profitable one, for of all the many insect pests which have been found here, and they are as numerous as anywhere on earth, and have been imported from all parts of the earth, there are not now more than two or three really serious species, and all are controlled by their insect checks, either native or introduced; and so far as those for which we have not yet found an effective parasite are concerned, we are now searching for one, and in view of our past success in this line, will undoubtedly find it.

INSECTS OF THE YEAR.

By EDWARD M. EHRHORN.

The season of 1904 is at its close, and although it has not been marked by any particular destructive pest affecting crops in California, yet the character of the year, combined with a very mild spring, with an abundance of weeds, favored a general increase of our more common species. These conditions naturally caused many inquiries to be directed to the office of the State Commissioner of Horticulture, resulting in an increased volume of correspondence.

PLANT LICE.

Every farmer knows the enormous prolificacy of this group of insects, and 1904 was rather favorable to their increase.

Apple-tree Plant Louse (*Aphis mali*). (Figs. 1 and 2.) This species occurs in greater or less numbers throughout the apple orchards of our State, and at times becomes a great nuisance and does considerable damage to trees. Reports from various sections show that this species appeared in great numbers. Thanks to the good work of our common ladybirds, this pest does not continue during the summer months. On young trees it is well to check the ravages as soon as the pest makes its appearance, using a good kerosene emulsion or whale-oil soap wash consisting of one pound of soap to five gallons of warm water so as to prevent the stunting of such trees.

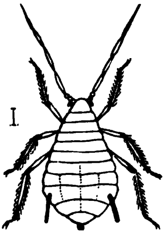


FIG. 1. Apple-tree Plant Louse (*Aphis mali*), immature insect.

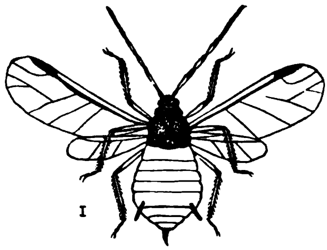


FIG. 2. Apple-tree Plant Louse (*Aphis mali*), mature insect.

Prune Aphis (*Aphis prunifoliæ*). (Fig. 3.) Very little inquiry reached this office in regard to this pest, and no doubt wherever it made its appearance it was kept in check by its natural enemies, as verified by subsequent correspondence with the growers.

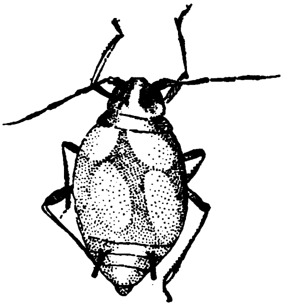


FIG. 3. Prune Aphis (*Aphis prunifoliæ*).

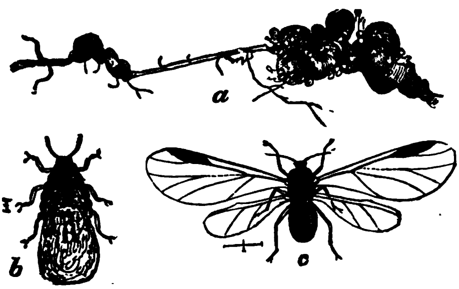


FIG. 4. Woolly Aphis (*Schizoneura lanigera*).

Woolly Aphis (*Schizoneura lanigera*). (Fig. 4.) Every season this insect has been reported, and 1904 records quite a lot of inquiry. The root form, or winter brood, does not seem to be as closely observed by the grower as its importance demands. This pest could be materially checked by attacking the root or winter brood in season, which can be accomplished by an application of gas-lime placed in a trench around the base of the tree. Care should be taken to avoid allowing the lime to come in contact with the bark. An ordinary shovelful to a full-grown tree is the usual dose. Smaller trees must be treated in proportion, as this material is very apt to do injury to the tree if an overdose be applied. Where gas-lime can not be obtained, wood ashes applied in the same manner have given good results. For the summer brood, aërial or branch form, as it is called, the same remedy as recommended for the apple-tree louse should be applied.

Black Peach Aphis (*Aphis persica-niger*). (Fig. 5.) This pest has been reported from some of the northern counties during the season. This species was introduced from the Eastern States several years ago into some of the northern districts, where the counties did not avail themselves of the horticultural protection provided for by our statutes. This insect is one of the most dangerous foes of the peach tree, and should be stamped out wherever found. It is a small brownish-black insect, and exists in the wingless as well as

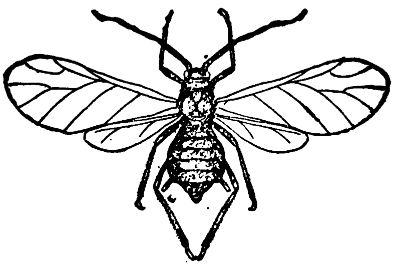


FIG. 5. Black Peach Aphis (*Aphis persica-nigra*).

the winged forms. It attacks the roots as well as the leaves and the new growth. The root form makes it possible for this pest to be easily transported from one county to another, so that vigilant inspection should always be made, or strict quarantine measures placed against districts infested with this pest.

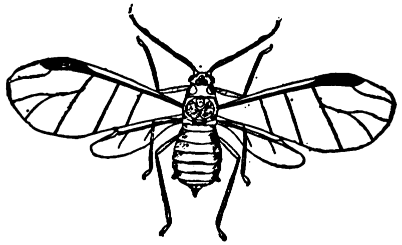


FIG. 6. Cabbage Louse (*Aphis brassica*).

Cabbage Louse (*Aphis brassica*). (Fig. 6.) This insect, although mostly confined to vegetable gardens and attacking the cabbage family, has of late been reported as becoming a serious pest in the seed farms. Great loss has been experienced on mustard, turnips, and radishes. Our common ladybird (*Hippodamia convergens*) has proved of great benefit. The experiment of placing enormous numbers of these ladybirds among the young plants when the first lice appeared proved of material help; in fact, one field of turnips was practically uninjured. These ladybirds can be collected in endless quantities in the fall in some of our mountain districts adjacent to the banks of streams, where they hibernate during the winter. After being collected they can be placed in well-ventilated boxes and stored in a cool place, requiring no attention or care until needed in the spring.

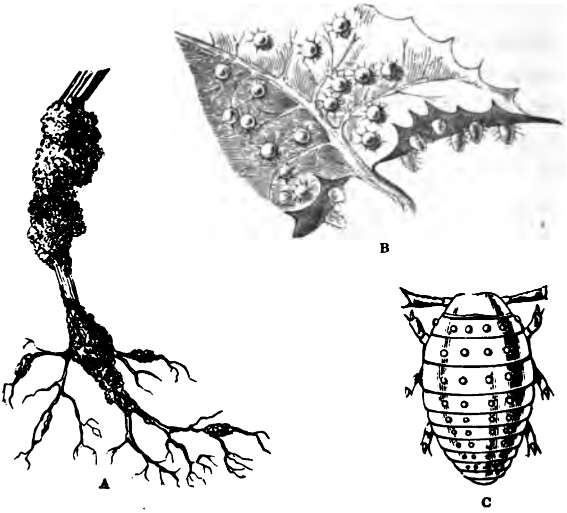


FIG. 7. The Grape Louse (*Phylloxera vastatrix*).
a. Root galls; *b*. Leaf galls; *c*. Root form, female.

Grape Louse (*Phylloxera vastatrix*). (Fig. 7.) This pest has been reported from nearly all the grape-growing sections of California for many years past, and the planting of resistant vines has proven the only money-saving check against its ravages. While it is true that for a time, when the pest makes its appearance in new localities, it can be kept down by removing all affected vines, as this pest spreads in circles and by removing these circles, it very often happens that eradication for a time at least can be made. However, the planting of phylloxera-proof roots is the only thorough method of checking the pest.

SCALE INSECTS.

Closely allied to the aphis are the scale bugs, which are another group of sap-sucking insects.

Black Scale (*Saisseta* [*Lecanium*] *olea*). (Plate IV, Fig. 4.) Reports from every section are very encouraging regarding the decrease of this terrible pest. Orchards that were covered with scale are beginning to brighten up their foliage, and the dirty, soot-like, fungus-covered leaves are gradually disappearing. All of this can mostly be attributed to the efficient work of two of our beneficial insects: *Scutellista cyanea*, the African parasite, and *Rhizobius ventralis*, an Australian ladybird, introduced several years ago.

Brown Apricot Scale (*Eulecanium* [*Lecanium*] *armeniacum*). (Plate II, Figs. 5, 6.) Investigation shows that this scale, although held in check by its parasite, *Comys fusca*, will, at times, show a slight increase. As it is well known that complete extermination by parasites is against the laws of nature and can not be expected, a sufficient number of scales are always left to propagate the species.

After the parasite has reduced the scale to almost nothing, it in turn decreases in numbers and apparently disappears. In a few years the scale again becomes sufficiently numerous to cause alarm, but examination will disclose the presence of the parasite in small numbers, preparing for a great battle, and soon a reduction of the scale follows and normal conditions are restored. In some seasons, climatic conditions very often retard the development of the parasite, and such seasons are favorable to scale increase. Growers should not feel discouraged at these conditions, as in time their little friends, a colony of which can always be obtained in season by making application to the State Commissioner of Horticulture, at San Francisco, will do the work for them at a cost of nothing.

Cottony Cushion Scale (*Icerya purchasi*). As usual, many applications for colonies of *Vedalia cardinalis* were received at this office. This shows that the cottony cushion scale still appears at intervals and causes no little annoyance to the grower and the florist. The office always keeps the ladybird for just such cases, and it may be interesting to know that at times it is very difficult to obtain sufficient food for the propagating jars, showing that this terrible pest will never invade our State again as long as we have its natural enemy.

Among the other species of scale insects which are always being reported from various sections, I may mention the following that have been complained of this season:

San José Scale (*Aspidiotus perniciosus*). (Plate III, Fig. 4.) This species, although pretty well under control in the southern and central portions of California, has been frequently reported from the northern sections of the State. Every grower who has had experience with the terrible ravages of this species, when it had its full sway in California, knows too well that to neglect taking stringent measures at once against it, wherever it may exist, would be the greatest folly. It is true that parasites and predaceous enemies keep the scale in check in most locations, but by unfavorable surroundings and with climatic conditions more salubrious to the scale and not as wholesome to the parasite, the scale will undoubtedly gain ground. In such cases the old reliable lime, salt, and sulphur wash is without question the best solution for the trouble.

Pear Scale (*Diaspis pyricola*). This species is becoming quite a troublesome pest on prune trees in the Santa Clara Valley, and although the twice-stabbed ladybird (*Chilochorus bivulneris*) reduced its numbers considerably, yet the habit which the scale has of getting under moss and lichens and loose bark makes it very difficult for the ladybird to accomplish much on that class of tree. The first important step, then, is to remove the moss and lichens from the larger limbs and trunk of the tree by applying either a strong lye spray, consisting of one pound of caustic soda (98%) to six or eight gallons of water, according to the condition of the trees and lateness of the season, or spray with lime, salt, and sulphur as for San José scale, and this will remove the moss as well as kill most of the scale.

Red Scale (*Aspidiotus aurantii*). (Fig. 8.) This scale is principally confined to certain localities of the State, some years showing an increase and others a decrease. Unfortunately, the internal parasite of this pest is a very minute fly, making its propagation and distribution very difficult. The fly is hardly discernible to the naked eye, and the fact of its microscopic nature has caused it to be entirely overlooked in many cases where colonies have been sent to applicants, they claiming that there was absolutely nothing in the vials sent. Reports from sections where it has become established are very encouraging, and we hope that in time it may aid materially in subduing this terrible pest.

As this is one of our most destructive orange and lemon pests, stringent measures should immediately be taken wherever it makes its appearance in new sections and a thorough eradication should follow, to stamp out this pest before it can gain a foothold.

The old reliable method of fumigation with hydrocyanic acid gas has for years been used successfully in holding this pest in check. The expense of this method has in the last season caused considerable experimenting along the line of sprays as a means of fighting it. A cheaper method appeals very strongly to the average grower, and certainly a reduction of expense in the method of warfare would materially aid the producer and be welcomed by all, if the same results can be obtained by its use. Reports from some of the southern districts claim that excellent results have been obtained by the use of distillate spray, but this as a remedy for red scale is as yet somewhat of an experiment and we must await with patience the outcome of the controversy now pending between these remedies, and make our individual decisions solely on results, for in the final count *results* will be the deciding point.

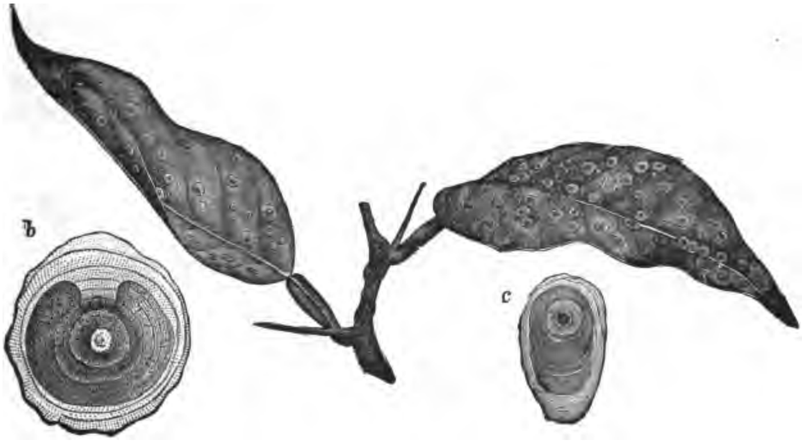


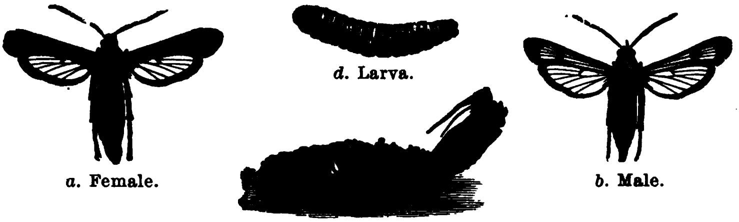
FIG. 8. Red Scale of the Orange (*Aspidiotus aurantii*).

Mr. George Compere, who is traveling abroad in search of beneficial insects, has sent several species of ladybirds which he found feeding on red scale (*Aspidiotus aurantii*) in orange groves, which were apparently kept clean by these species, as the scale was found in very limited numbers. These ladybirds are now being propagated by the Quarantine Division, and will in time be liberated in sections where this pest is to be found.

LEPIDOPTEROUS INSECTS.

Peach-root Borer (*Sanninoidea opalescens*). (Fig. 9, *a*, *b*, *c*, *d*.) By a thorough and systematic method of fighting, this pest is much reduced throughout the infested regions, and more confidence regarding the future is generally observed. For a number of years endeavors have been made to find some substance which would kill boring insects by contact, but so far the nearest approach to such a substance is heavy crude oil.

In 1902 Mr. D. B. Pickering, of Santa Clara, applied heavy crude oil of an asphalt base, an oil of from 14° to 16° Beaumé, to the trunks of his trees which contained borers, and the result was so gratifying that the next season he extended his experiments and induced some of his neighbors to follow his method. Mr. Pickering's method is as follows: Remove the earth from around the trees to the larger roots and scrape off all clinging material, such as gum, borings, and clinging earth, it being necessary to open all channels where borers are located, which are usually clogged by these substances. As soon as the trunk and exposed roots are thoroughly cleaned, a heavy coat of oil is applied with a paint brush as high up as the ground level and the trench left open for a few days, when the earth can be replaced. The fumes of the oil will enter the opened channels and drive the borers out, and coming in contact with the oil, they will soon perish. In order to avoid any possible injury to the tree by the application of this remedy, it has been deemed wise never to bring the oil above the surface, so as to prevent the sun from driving it into the bark. It is well to paint the trunk above the ground with lime and crude oil mixed as follows: Slake 50 pounds of lime, and while slaking pour in from 2½ to 3 gallons of heavy crude oil, with enough water added to make a thick paste, like whitewash. Another very good substance is made as follows: Slake 50 pounds of lime, and while slaking pour in from 1½ to 2 gallons of gas tar. Dissolve 12 pounds of whale-oil soap and add this to the lime and tar solution, making the whole into a thick whitewash by adding a little water at a time and stirring constantly. These applications will prevent the young borer from entering the bark above the surface line and are absolutely necessary to be applied in conjunction with the crude oil below ground.


d. Larva.

a. Female.

b. Male.

c. Pupa.

Fig. 9. Peach-root Borer (*Sanninoidea opalescens*).

Digging out the borer in the fall is still practiced by many growers and will answer the purpose where careful work is done by the grower himself and followed up with the lime and gas-tar solution, but where careless help does the digging greater damage than that done by the borer is usually the result.

Peach Moth (*Anarsia lineatella*). (Figs. 10, 11, 12, 13.) A great deal of complaint regarding this pest was received, and generally speaking it was more numerous this season than in 1903. Growers should endeavor to check this pest by spraying with lime, salt, and sulphur as close to the growing season as possible. The hibernating larvæ can be easily destroyed at this period and in this way prevent the development of a later brood which attacks the fruit. The grower who objects to lime, salt, and sulphur can use a good kerosene emulsion in place of it.

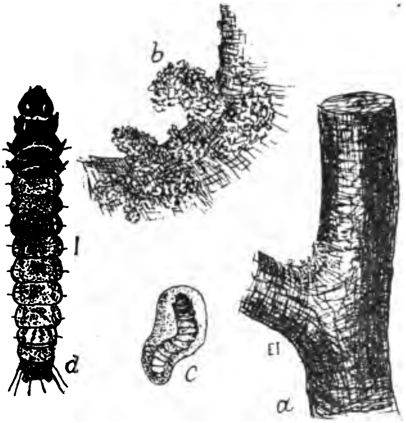


FIG. 10. Peach Moth (*Anarsia lineatella*).

a. Peach-twig, showing minute masses of chewed wood in crotch above larval chambers. *b.* Same, much enlarged. *c.* A larval cell with contained larva. *d.* Dorsal view of young larva, much enlarged. (After Marlatt.)

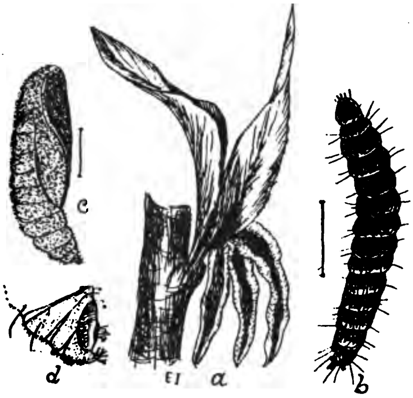


FIG. 11. Peach Moth (*Anarsia lineatella*).

a. New shoot of Peach withering from attack of larva. *b.* Larva, enlarged. *c.* Pupa, enlarged. *d.* Anal segment. (After Marlatt.)

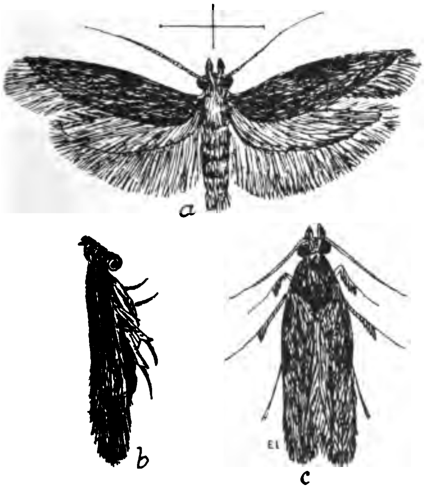


FIG. 12. Peach Moth (*Anarsia lineatella*).

a. Moth with spread wings. *b*, *c.* Same, with wings closed, illustrating positions normally assumed. All much enlarged. (After Marlatt.)

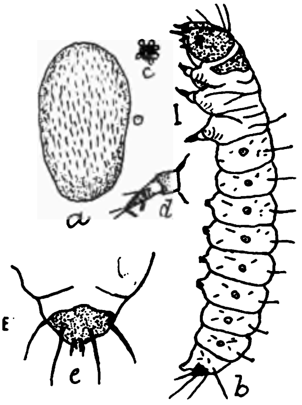


FIG. 13. Peach Moth (*Anarsia lineatella*).

a. Egg. *b.* Young larva. *c.* Eye. *d.* Thoracic leg of same. *e.* Anal segment from above. All greatly enlarged. (After Marlatt.)

Codling-Moth (*Carpocapsa pomonella*). (Figs. 14, 15.) This pest is one of the oldest in our State and causes enormous losses annually. If reports, correspondence, and frequent interviews have any significance, then 1904 was a banner year for the codling-moth. No doubt the late rains helped somewhat to prevent thorough spraying as well as to wash off a great deal of the poison calculated to do good work against this pest. Canners, generally speaking, have reported an abundance of wormy pears, and from my own observations I have never known Bartletts to be so severely attacked as they were this season. The question now arises, what can be done to overcome these ravages? The only way at present is to apply poisonous sprays and capture the larvæ under bands, as has been practiced for years. It is essential to procure the best of paris green and, before using it, have it tested as to its purity. Another very important point is the application of the poison in as fine a spray as possible, and never drench the trees, as the surplus will drop off the trees and carry the paris green, which is heavy and settles readily, with it.

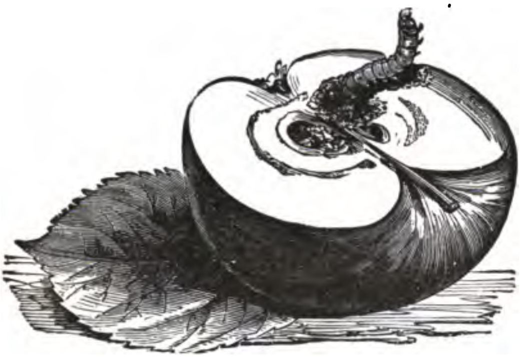


FIG. 14. Codling-Moth (*Carpocapsa pomonella*), larvæ in apple.

Mr. George Compere, who is at present engaged in the search for parasites for this terrible pest, has already sent two species to the Commissioner of Horticulture, which arrived in good condition, and if it be true what Mr. Compere has observed and what he reports of the work of these insects in Europe and we can propagate and establish the parasites in California, then we have gained a victory which is worth untold millions to the growers and to the State.

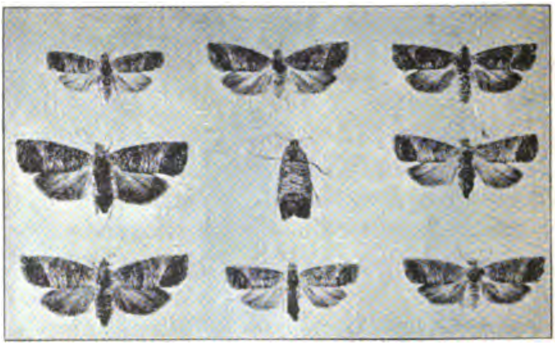


FIG. 15. Codling-Moth (*Carpocapsa pomonella*), showing variations, all natural size.

Cankerworms (*Alsophila pometaria* and *Paleacrita vernata*). (Figs. 16, *a*, *b*, and 17.) During the early part of this year cankerworms were reported from various sections of the State. Much spraying with paris green was resorted to, but as usual the results mostly proved failures.

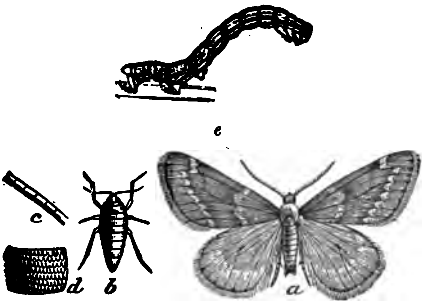


Fig. 16. Fall Cankerworm (*Alsophila pometaria*).

a. Male moth. *b.* Female moth. *c.* Joints of antennæ of female, enlarged. *d.* Segment of body of female, enlarged. *e.* Larvæ of cankerworm.

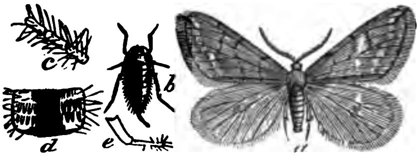


Fig. 17. Spring Cankerworm (*Palecrita venata*).

a. Male moth. *b.* Female moth. *c.* Three joints of antennæ of female moth. *d.* Abdominal segment of female moth, enlarged. *e.* Ovipositor, enlarged.

The wire-mesh traps, wherever correctly adjusted, proved a great success, as they capture the female moths in autumn and in this way prevent a brood of worms. The reason we often hear of the failure with the wire-mesh traps is on account of their careless adjustment to the tree, as many growers employ inefficient help for such important work and the traps are put on in a haphazard manner.

Another failure can be attributed to neglect in removing the traps, after the moth has been captured. This is absolutely necessary, as a great many eggs are laid on and about the trap and these hatch into minute worms, which can readily pass through the mesh and crawl up into the tree. By removing the traps, burning the cotton batting, and whitewashing the trunks of the trees from where the trap was placed to the ground, all eggs will be killed and the pest materially checked. The traps can be scalded and dried, stored away, and again used for several seasons.

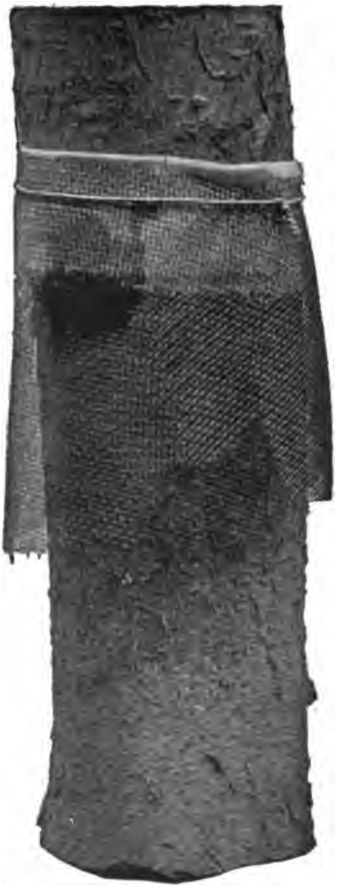
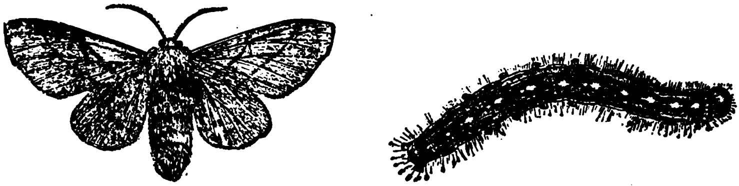


Fig. 18. Cankerworm Moth Trap.

Leaf-Rollers (*Cacœcia obsoletana*, Walk.). With the cankerworms this season there appeared a green caterpillar with a black head resembling the cankerworm, but not looping when in motion. These are leaf-rollers, and generally hide between two or more rolled-up leaves. Much alarm was felt for a time and various poison sprays were tried, but with poor results. Many trees were stripped of their leaves and growth, giving them a very ragged appearance. This insect has been with us for some time and its appearance in such great numbers can be attributed to the mild spring weather with little rain. As soon as the caterpillars matured the damage ceased and the trees soon recovered their verdure.

a. Egg cluster.



b. Female Moth. *c.* Larva.

FIG. 19. Tent Caterpillar (*Clisiocampa sylvatica*).

Tent Caterpillars (*Clissiocampa californica* and *C. constrictor.*) (Fig. 19, *a*, *b*, *c*.) These caterpillars were not reported as plentiful as last season, although occasionally complaints of their damage would reach the office. We have a great number of enemies attacking our common caterpillars, and some of our insect-feeding birds do much toward keeping down their numbers. Climatic conditions very often help greatly in the increase of these pests, and in such seasons an early attack on the brood will in most cases prevent much damage. Collecting and burning the webs containing the caterpillars has been found the easiest and best method of coping with this pest.

MISCELLANEOUS INSECTS.

Cherry Slug (*Eriocampa cerasi*). (Fig. 20.) This pest was found quite abundant in various sections, especially doing damage to cherry trees. The pest is easily killed by dusting the trees with either road dust or air-slaked lime, and the fault of increase can be attributed to the fact that the grower generally waits too long and allows the first brood to multiply. If the first individuals are killed off, a complete check will be

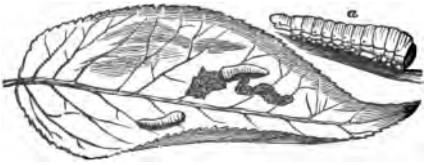


FIG. 20. Cherry Slug (*Eriocampa cerasi*).

made for the season. Spraying with paris green will greatly help toward checking the ravages, provided the finest spray be applied and the trees not drenched with the liquid, as is usually the practice among orchardists.

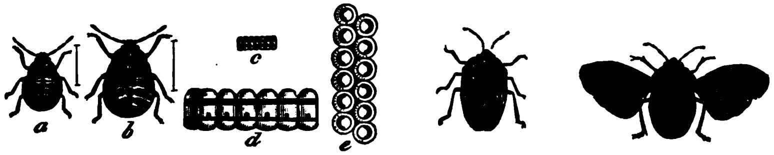


FIG. 21. Harlequin Cabbage-bug (*Murgantia histrionica*).
a. Larva. *b*. Pupa. *c*. Eggs, natural size. *d*. Eggs, enlarged. *e*. Eggs seen from above, enlarged.

Harlequin Cabbage-bug (*Murgantia histrionica*). (Fig. 21, *a*, *b*.) This insect belongs to the true bugs, and is a flattened black bug with bright red or yellow markings, living on plants belonging to the cabbage family. It lives by puncturing the leaves and sucking the sap, and causing much damage to the fields of cabbage. This pest is very difficult to kill, and the contact sprays which usually kill sucking insects have to be applied in such strength that they generally ruin the plant. The hibernating bugs which gather in clusters on old dried plants during the winter can be collected or killed by very strong sprays. Collecting the winter brood by hand is too expensive and too tedious an undertaking if done on a large scale. This insect has been reported from a great many sections of the State as doing considerable damage, but much of this damage can be overcome by destroying the winter brood.

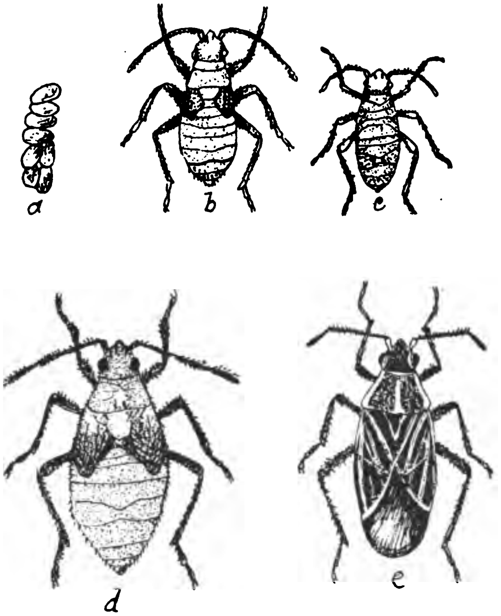


FIG. 22. Box Elder Plant-Bug (*Leptocoris trivittatus*)
a. Eggs, enlarged. *b*, *c*, *d*. Different stages of immature bugs; all enlarged. (After Howard.)

Box-Elder Plant-bug (*Leptocoris trivittatus*). (Fig. 22.) Although this pest is a feeder on the box-elder tree, it does at times attack fruit trees, such as peaches, plums, and apples, and also various plants of the flower garden. Its habits are somewhat similar to those of the Harlequin cabbage-bug, especially the winter hibernating brood, which sometimes collects in houses or in the crevices of the rustic boarding and in the angles of stone buildings. On warm winter days one can observe these individuals flying in every direction. In the fall of the year, when they congregate, they can be readily destroyed with hot water or may be collected in kerosene pans. When this pest has been observed doing damage it will pay to be a little industrious and kill off the hibernating individuals in the manner suggested.

Fuller's Rose Beetle (*Aramigus fulleri*). (Fig. 23.) This beetle has been recorded as being plentiful in some of the southern counties and as one of the most destructive pests known to young orange groves. Although it exists in the northern districts, yet the damage caused by it is not a circumstance to that done in the south. This pest, although found feeding on every variety of plant, seems to prefer the young growth on orange trees, and here is where the great damage to newly budded trees occur. The larvæ or grubs live in the ground and feed on the roots of trees and plants and are very hard to control. Trapping the beetles is about the only way to get rid of them; they can also be prevented from ascending the tree by using a band of cotton, which should be tied around the trunk and loosened at the bottom, so as to be woolly, thus preventing the beetle from climbing over it. The beetles are easily shaken from the tree and can be collected on a sheet, as they can not fly. Experiments with carbon bisulphide have been carried on against the grub with some success, but as the grub is found generally distributed through the ground, it will take a large amount of the chemical to go around; it is therefore too expensive to be used as a practical method of eradication.

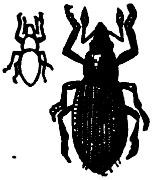


FIG. 23. Fuller's Rose Beetle (*Aramigus fulleri*).

Thrips. (Fig. 24.) These minute insects have again appeared in several sections and have done considerable damage to the buds, blossoms, and leaves of deciduous as well as evergreen trees. One species, *Euthrips fuscus*, in particular has been very destructive to the buds and blossoms of prune, apricot, and peach trees in the Santa Clara Valley. The infested area is well marked, as the fruit did not set at all, and during the blossoming season each infested orchard presented a dismal look in contrast to the beautiful white blossoms of other sections. The damage done by this insect is first caused to the style of the blossom, which it punctures, so that fertilization can not take place; but if fertilization has taken place, then the injury will be noticed on the mature fruit, which is badly scarred, and this will serve as an indication to the grower that the insect is present on his trees. To what extent this pest will spread is difficult to say, but stringent measures should at once be taken to prevent it from gaining a strong foothold. Spraying with any oily mixtures, whale-oil soap, crude oil, or keresone emulsion, just as the buds are swelling, will greatly reduce the pest.

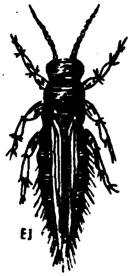


FIG. 24. Thrips.

RED SPIDERS AND MITES.

Perhaps the most troublesome small things to annoy the grower are what are popularly known as red spiders and mites. Almost every season these microscopic creatures are reported as doing some damage to fruit trees or they are injuring the vegetable gardens or hothouse plants.

Red Spider of the Almond (*Bryobia pratensis*). This species was not reported as abundant in the sections where last season such damage was experienced, and this is probably due to the late spring rains. In the drier sections of the State this species, with its cousin, the yellow mite (Fig. 26), holds full sway and can only be kept in check by the application of dry sulphur or by a sulphide of potash spray.

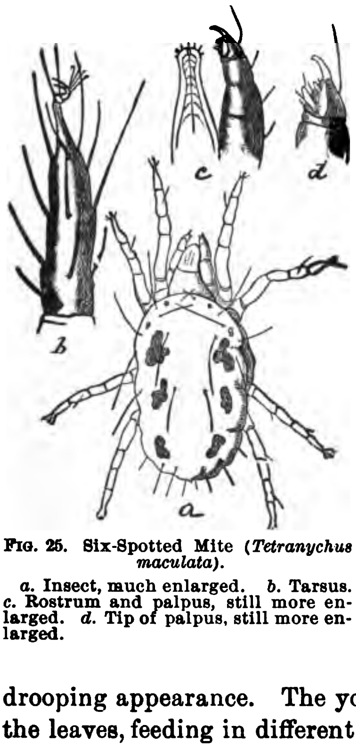


FIG. 25. Six-Spotted Mite (*Tetranychus maculata*).

a. Insect, much enlarged. *b*. Tarsus. *c*. Rostrum and palpus, still more enlarged. *d*. Tip of palpus, still more enlarged.

Orange Mites (*Tetranychus mytilaspidis* and *T. sexmaculatus*). (Fig. 25.) These species have been reported from several sections as doing considerable damage to young citrus trees. In some sections they can always be found in limited quantities only, especially where fumigation or spraying is generally practiced, but they become a very serious pest if not subdued in time by either of the above methods. The presence of these mites may be easily detected by an examination of the leaves, which have a drooping appearance. The young spiders wander all over the surface of the leaves, feeding in different places by puncturing them. These punctures give the leaves a mottled appearance when examined through a lens. It is this terrible sapping of the leaf which causes it to have that unthrifty look, and naturally is the result of the sap being taken by these minute insects.

Pear-leaf Blister Mite (*Phytoptus pyri*). (Fig. 27.) This mite differs very much in structure and habits from all common mites, it being cylindrical in form and living in the tissue of the leaves. Early spraying with kerosene emulsion or treating the trees with dry sulphur will check further development. The presence of this mite can be readily detected by the blisters or galls on the young foliage, which are easily recognized by their reddish color. This or a near species also attacks the walnut, grape, orange, and lemon, and the same remedies can be used to check these.

FIG. 26. Yellow Mite.

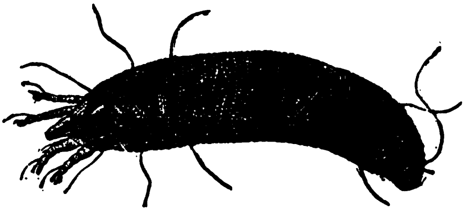


FIG. 27. Pear-Leaf Blister Mite (*Phytoptus pyri*), very greatly enlarged.

MISCELLANEOUS.

Pear Blight.
The Apple in California.
Marketing California Fruits in Europe.

PEAR BLIGHT.

This disease, which until some three years ago had confined its ravages to the upper San Joaquin Valley, and had appeared, though not to a serious extent, in the southern counties, has now spread over the greater portion of the State, the only sections so far reported as free from it being the coast counties. It has shown itself in San Joaquin County, has appeared in destructive force in the great pear section along the Sacramento River, and is reported in all the counties of the Sacramento Valley and most of the mountain counties. Its attacks have not been confined to the pear, but in the apple sections in the mountain valleys the apples have also suffered. In Sacramento County, along the river, and through the Sacramento Valley, pear-growers have been indefatigable in their efforts to stamp out this dread disease. Vigorous cutting-back has been resorted to, the orchards have been carefully watched, and the disease has not been allowed to obtain any headway. It is yet too early to judge what the result of this treatment has been, but it is to be hoped that it has checked the spread of the trouble.

In Sacramento County, Dr. L. C. Chisholm, who has been acquainted with the disease for many years in the Eastern States, where it originated, has been engaged in the prosecution of the campaign against it all summer, and we append herewith his report on the matter:

ZYMOTIC PEAR BLIGHT.

By L. C. CHISHOLM, of Sacramento.

We are told by our plant pathologists that the pear blight appeared in the beautiful valley of the Hudson River as early as 1794. Duhamel (1768) mentions a pear blight that was very destructive in Europe in the seventeenth century. Again we have Downing, an eminent American horticulturist, writing of pear blight in 1845. It remained, however, for Prof. T. J. Burrill, of Illinois, in 1879, to discover that true blight is of a bacterial nature, and is caused by a minute microbe, and it is now known as *Bacillus amylovorus*.

Much time and study have been given to this disease, but as yet it seems that little has been published as to its treatment. The true or zymotic pear blight is now in nearly every pear orchard along the rivers in northern California, and is seriously threatening the very existence of the greatest pear-growing district in the State, that of the lower Sacramento Valley. This same bacterial blight has devastated the pear orchards of Kern, Kings, Tulare, and Fresno counties, in the San Joaquin Valley.

In a report from the State of Washington the statement is made: "All through the inland region, pear blight has been a terrible scourge. A conservative estimate is that seventy per cent of all the pear trees in this region have been ruined by pear blight within the last six years. Pear-growers are generally discouraged at the outlook." The "Pacific Homestead," of June 2, 1904, says: "Pear blight has wrought such havoc of late years that interest in pear-growing is at a low ebb."

This disease attacks not only pears but apples, quinces, and all pomaceous fruit trees. Pear blight has been particularly bad on apple trees in the Alleghany regions this year, and recent reports from Utah declare that it has such a hold there as to seriously menace the pear-growing industry, and the situation is made more serious by the recent discovery of what is called the same disease in apricot trees in Brigham City orchards, where its deadly effects were more rapid in developing than in the pear or quince trees, the apricot tree succumbing very quickly after the first appearance of the malady. From three to five years is the time usually required by this disease to destroy an orchard.

No variety of pear trees is exempt from blight, but some are less susceptible than others, the Duchesse, Kiefer, Winter Nelis, and Seckel pears being less subject to blight, while the Bartlett, Clapp's Favorite, and Idaho are its prime choice. Top-grafted or field-grafted trees of any variety suffer most when once attacked.

While malignant blight is quite an old disease, it is apparently of American origin, as we hear nothing of it from Europe to indicate that the zymotic blight exists there.

There are several forms of disease that affect the pear trees, hence we have several kinds of blight, mentioned as Winter leaf blight, Summer blight, Winter blight, Insect blight, Frozen sap or Sour sap blight, Malignant, Zymotic or Bacterial blight (Burrill). The last named is the disease with which California orchardists are now contending. As there are so many causes, local and otherwise, that perhaps call for so many names, we shall mention, aside from zymotic blight, what is called insect blight by Downing. It would perhaps be impossible in California to reconcile each name to a condition. Insect blight, which was very prevalent in the lower Sacramento Valley this season, is caused by the larva of a very little brown beetle about one fourth to one half of an inch in length, one of the Scolytids. The beetle deposits its eggs at the foot or crotch of a fruit spur. The larva burrows its way straight down to the center of the twig from two to four inches. The twig dies and the leaves turn brown or black in the sun, having much the appearance of fresh blight. The larva or the bug is easily found in May and June, in the lower Sacramento Valley. The shot-like hole can always be found and there is no chance to confuse this dead twig with true blight. Downing in his work on horticulture calls this bug the *Scolytus pyri*.

Frozen-sap blight is a condition common to fruit trees of all kinds in countries of very variable climate. This so-called disease is not communicable by inoculation. Several theories are advanced as to its cause, the most feasible being that of the sap and cambium freezing or chilling, and later souring, causing the death of the limbs. A lack of sufficient moisture during the latter part of the growing season, which makes it impossible for the tree to furnish sap enough to compensate for the evaporation from the leaves, is a prime cause for so-called dieback blight. Root fibers killed by too much water result in the same effect.

Nothing new or peculiar is noticed in the present epidemic, but in all countries where blight first makes its appearance much is taken for the typical disease which is not true blight, and much that is true blight, left over from previous seasons, is taken for "dieback." There is no difficulty in noting the difference between insect blight and true blight. As before remarked, the shot-like holes and the beetles themselves may be found. One can readily recognize the true disease by the peculiar dark reddish brown of the leaves, accompanied by the discolored and blackened limbs, and while it is yet growing the cambium is darker lower down the twig than is shown on the bark. Many orchardists have declared that the blight had just broken out, when it could be seen by the line of demarcation, plainly separating the diseased from the healthy wood and by new twigs putting out as if to repair the injury that the blight was of old standing and was dormant for the season.

Many claim that as fast as they cut it out it appears again. This is in a great measure a false idea, as I shall try to show.

Zymotic pear blight first makes its appearance in the spring on the blossoms. When the blossoms begin to drop their petals, a few bunches may be observed to turn brown and cease growing, having the appearance of being frost-bitten or scorched with fire. The growth of the disease, which now begins to creep down the fruit spurs, is at first slow. Many cases will remain dormant until several of the pears are quite large, and then begin as if a new case had just been inoculated. This is called by Professor Ward, United States Plant Pathologist, "blossom blight," and many observers have found very little of any other kind. It is safe to say that ninety per cent of the blight found in flowerless twigs was carried there and the twig punctured or injured by an insect of some kind or the claw of a bird after just having had its feet in the gummy exudation spoken of later. In many cases of extended blight the leaves remain green for several days. Especially is this the case later in the season, and on blossomless twigs or water sprouts. Let it be remembered that no well-authenticated case of malignant pear blight has ever been known to begin in the leaves. The twigs and smaller limbs, after the blight attacks them, turn very dark or black. Where the limbs are larger and the bark thicker all of the cambium is not killed at once. This may in part account for the leaves remaining green so long after the blight has reached below them.

Usually after May 1st in California the disease advances very rapidly, running down the tender new twig growth to the larger limbs and to the body of the tree. Sometimes this rapid march of the disease reaches the body of the tree the first year of attack.

In many cases of blight in the lower Sacramento Valley, this season (1904), it was found that the disease had gone down the limbs in streaks from blossom to the body of the tree, a distance of four feet with only a few dead leaves. The blight germs rarely if ever kill the leaves. The foliage on the blighted limbs will eventually die as the source of the water supply is cut off. Sudden hot, dry spells and dry north winds cause the leaves in such cases to die and turn brown so suddenly as to give the appearance of very rapid spread. When a limb is girdled by the disease the foliage will also wilt and dry in a few hours.

Many small, tender twigs may be found black with blight, and only a dead and dried blossom appear, with all the leaves green. This was noticed very many times. This accounts for the report that it is constantly spreading, the operator having simply cut out the dead foliage. Atmospheric conditions usually control the rapidity of the spread of the disease.

One of the most prolific causes of the continued appearing of the blight is to be found in the failure to cut it back below all diseased wood, and perhaps the inoculation of the next healthy limbs cut. In hundreds of reappearing cases, it was the same old blight very slightly crippled, as the fresh cuts were always found, or else the primary fruit bunch was there to show its blossom origin. The disease usually stops growing by the 15th of July in this valley, but many cases in soft, tender wood, as in top grafts, continue to grow slowly all summer.

Professors Waite, Burr, and others have shown conclusively that the disease is of bacterial origin. The bacteria are found in the cambium layer, the thin, pulpy substance between the wood and the bark. The disease works down the twig from the blossom usually. It continues growing until the cambium gets too dry and hard for the microbe to grow (or ferment). This is usually in July, when the fruit ripens. When the disease ceases to advance, a plain line of demarcation is drawn at the healthy bark, which has rather a swollen appearance or full, plump look in contrast with the black, shriveled, and dead bark of the blighted limb. After a few days, new shoots put out from the healthy wood as if to repair the damage. There can be no doubt that the disease is scattered from the blossom in the spring, as the microbes multiply or cultivate very fast in the nectar and it is thus scattered by the bees and nectar-feeding insects. Bright, warm days during flowering time are conditions very favorable to its culture and spread. Sometimes the conditions not being favorable to the growth of the bacteria, they will lie dormant for some time, then grow very rapidly.

In 1901 in the State of Washington the disease did not become noticeable until the fruit was fairly well grown.

Mr. Chauncey, Horticultural Secretary of Fresno County, says that it did not make its appearance in Fresno County until April 22d, this season. When the blight is growing slowly the healthy bark sometimes breaks from sap pressure, and a gummy exudation takes place. This exudate contains myriads of the microbes, and thus becomes a great source from which insects carry the disease to the late blossoms or injured twigs.

The disease germs are no doubt carried over from one season to another in the bark of tender shoots, not dry, where the diseased wood blends gradually into the healthy wood and sap pressure in the spring causes the sap to exude with the germs. A single limb can infect a whole orchard. The cold breezes of the East do not seem to kill the germs of the disease.

Tender twigs inoculated with the diseased cambium or exuded gummy sap, blighted in twelve to twenty-one days, blighting sooner in warmest weather. The diseased cambium or exudate smeared on twigs did not produce blight unless the twigs were injured by pricking with a knife point or a needle.

Professor Waite says: "The pear blight microbe is a very delicate organism and can not withstand drying to any length of time. In old dried bark where the disease has stopped, the microbes are all dead and have disappeared." This being true, we can take the disease at its weakest time, late summer or fall, and greatly check the prime cause by destroying the microbes left in any large limbs which retain any living virus, and in order that the disease may not reach a serious stage, we must cut it out well below the diseased part, thus being sure that none of the dead cambium remains. This dead cambium shows discoloration usually while growing for quite a distance below the blackened bark.

The best time to find all of the diseased wood is in the fall, as the leaves of blighted wood do not drop at once; but all agree that it should be cut just as soon as it makes its appearance.

The biennial report of the State Board of Horticulture, Utah, 1901–02, has the following, page 29: "In pear blight control in the orchard of

James Meldrum is an illustration of what may be accomplished by active early treatment. The writer hearing of the disease in Mr. Meldrum's orchard in the latter part of June, visited the premises, and having battled with the pear and apple blight in his youth in Nebraska, immediately pronounced it the much dreaded disease blight, and advised the cutting out and burning of all affected parts, at least eight inches below the part showing disease. The entire Board afterwards visited the orchard and advised in addition to cutting out diseased parts the application of kerosene on the stub whence the limb was cut. This was to insure the death of any germ that, through accident, might remain, and also to destroy any germ that might come in contact with the fresh cut thus left exposed. Mr. Meldrum went over the entire orchard, consisting of one thousand trees, and cut away and burned all diseased parts. Some, however, were left, and a later cutting and burning had to be done; but Mr. Meldrum, being a Scotchman, had the stick-to-itiveness necessary for the existing conditions, and kept up the warfare. Mr. Meldrum's orchard is situated so as to give pear blight every advantage. The soil is deep and heavy. The surface is well cared for and kept free from undergrowth, weeds, grass, or anything of the sort, and the abundance of the water used forced an extraordinarily strong growth. There are a few diseased limbs noticed in Mr. Meldrum's orchard at this writing, but he will cut out and burn at an early date all such affected limbs. He is not discouraged at the prospect, though in July a bargain might have been had at his place, for with one thousand trees nearly all containing branches blackened and dying with a disease which apparently had full sway, Mr. Meldrum demonstrated that much may be accomplished by the proper treatment at the right time." Later: "No appreciable damage was done to crop of fruit on trees. In same vicinity other pear orchards not properly worked were ruined by the blight."

Captain R. S. Emory, of Chestertown, Md., one of the veteran and largest pear-growers of the United States, says in a letter of date July 7, 1904: "The blight has given me much trouble, but I have been able to keep it down by simply cutting it out, *well back to healthy wood.* Should any mistake be made and you cut into healthy wood, *wipe the shears clean* or you will inoculate the next limb. I use coal oil with a few drops of carbolic acid in it. I carry in my pocket a piece of woolen goods for that purpose. Piece of an old flannel shirt I find excellent. I have been more successful in keeping it down by *careful* cutting out just before winter, but cut out in *summer also.* Am at it now. Have it very bad, particularly in Bartletts. Mr. Waite, of Government employ, has spent a good deal of time with me to find a remedy. The knife is the only one we have yet found. It is epidemic this year with us. Have not lost any trees." It can plainly be seen that "eternal cutting" is the price of the pear orchard.

There is a peculiar condition of the bark of the pear tree called "crater blight." In this condition the bark is black and shrunken to such an extent as to form a depression or crater. This shrunken or black bark is usually so hard as to be with difficulty cut with an ordinary knife. The cambium layer is usually found alive in crater blight. I do not know the cause of this condition, but some ascribe the same to strong alkaline washes used a year or two previous to the crater formation, while others declare it is peculiar to the pear tree. When the zymotic blight reaches the larger limbs or the body of the tree it sometimes spreads out over the entire trunk of the tree or large limb without immediately destroying the foliage above, as the inner layer or cambium is not totally destroyed. In this condition the cambium renews itself the following spring, when the bark resembles crater blight very much. In cases like this the true blight sometimes has a spontaneous cure. When the true blight reaches a large area of crater blight it is a most difficult matter to know what to do, or to decide how far the zymotic disease has gone. In cases of doubt cut out smaller limbs and split bark with sharp knife or point of hatchet and smear splits with crude carbolized petroleum.

Treatment.—The treatment of zymotic pear blight, after years of careful study, crystallizes itself into—destroy the microbes, and render the tree as resistant as possible. Our only way to destroy the microbes is to cut the diseased parts away and destroy with fire. After cutting out limbs, apply crude petroleum, or common coal oil, to the cuts, and wipe the shears with a cloth damp with oil. Add a teaspoonful of carbolic acid to the gallon of oil. This helps to drive away insects, and keeps out water to a small extent. The stubs are thus disinfected, and insects neither bring nor carry away the virus. The 95 per cent carbolic acid found in drug stores is the kind used.

As to *preventive measures*, we recommend the practice now used in some parts of the country, that of taking off all fruit spurs on the main trunk and large limbs each season, leaving only the terminals to bloom and bear. Hence, whenever the blight makes its appearance it is upon the terminals. On account of the bacteria finding entrance through the tender surface of the blossoms, the attacked portion can then be cut away as often as is necessary without destroying the symmetry of the tree or sacrificing any of its framework. In course of time the malady thus treated is found to practically disappear as it seems to lose its pristine virulence, the only loss being to the crop, while the tree has not suffered.

As to other methods of prevention, they are purely speculative, not having been tried west of the Rockies. Pear trees are not as long lived in California as in the East, and they come into bearing much earlier.

It is found that where the pear trees in Sacramento County exhibit an abundance of health and thrift, as in the orchards near Sacramento City, on rich, loose, light soil, no blight is seen, while those half a mile away on hardpan, with heavy top soil, have an abundance of the disease. The Eastern idea to neglect trees and so prevent the ravages of the disease, is based on the theory that very tender wood, late to mature its growth, rendered the tree more susceptible to blight. The same treatment will not do in district No. 2, in Sacramento County, as the splendid sub-irrigation keeps the trees producing tender wood, and a failure to cultivate renders the shoots watery and immature, thus producing the very condition you do not want, and results in more and worse blight. The uncultivated tree is deprived of mineral nutrients, needful to its proper development, as it can only get these nutrients sufficiently by good cultivation and letting in the air to nitrify the soil. It is also a custom in the East to top-dress soils in orchards with fertilizers that contain carbonate of lime. For more than twenty years dwarf pear trees on quince stock have borne good crops with this treatment, with blight appearing at intervals. In the Yearbook of 1897, United States Department of Agriculture, it is stated, "a coating of lime and sulphur annually reduced blight to a minimum."

Here is food for thought. The functions of the mineral nutrients in plants contribute a highly important problem. Why should not the Bartlett pear be as immune from blight as the Kiefer or Nelis? In orchards in district No. 2, with Nelis and Bartletts side by side, the Nelis is seen to have darker green leaves, heavier foliage and twigs, and has every indication of being a more vigorous grower, and has not blight. Yet in the hills I find the Nelis with lighter foliage, less evidence of "good blood" (chlorophyll), and blighted. In all orchards examined where there was "good blood" as evidenced by an abundance of deep green chlorophyll in the leaves, there was a minimum of blight or it was entirely absent. In such orchards, it was easily checked, as the cambium was moist and the blight could be seen and cut all at once, none dormant.

Charles Downing long since advocated the use of lime to produce short, stocky wood to pear-fruit spurs. While the lime may not make the twigs shorter, it will make them mature much earlier. Lime has the tendency to make heavy, damp soil lighter. It was found that in soils showing most evidence of alkali, the blight was most severe, and that pear trees on such soil had every indication of starvation—small fruit, pale leaves, etc. Here I found most of the dieback. This was attributed to the fact that too much alkali renders the rotting of organic matter very slow, at the same time rendering the phosphoric acid unavailable to the rootlets. Hence a thin, watery cambium, easily dried up and very subject to blight quickly. Such limbs seldom die the first year, but make an effort to put out leaves and blossoms next season, and die outright before the leaves are half grown. This is the "dieback." Not every time from an excess of alkali, however. In this condition the cambium is light brown or not discolored at all—not black as in blight. I do not ascribe the cause of pear-blight microbes to a deficiency of certain mineral matters in the soil, but such deficiency renders the cambium, the seat of the disease, more subject or a more fit medium for the propagation of the bacteria (ferment).

As in the animal economy the leucocytes assist in warding off disease, so do certain mineral nutrients help to ward off diseases in plants. In alkali lands, lime is needed to render the phosphoric acid more available, which the alkali (sulphate of soda, chloride of soda, and carbonate of soda) has a tendency to "lock up."

The phosphoric acid with the iron compounds is absolutely necessary to the formation of chlorophyll green. Hence, in addition to the soil of ashes, lime, sulphur, potash, sulphate of iron produces stocky, well-ripened growth and early maturity.

Preference is given to five hundred pounds of well-slaked lime to the acre; on wet soils, and if the soil is poor, two hundred to five hundred pounds of bone meal may be added. On drier soils in California the raw bone meal alone is best, as the lime dries out the soil.

Spraying the trees well in spring, about the time of flowering (as recommended by the County Board of Horticulture), with solutions containing arsenic, no doubt lessens the attack of blight, as the spray renders inert the germs in the gummy exudations and perhaps poisons insects that eat it.

While we have offered no specific for pear blight, we trust that these thoughts will put men to thinking. "To agitate is to educate."

As this matter of pear blight is at the present time the one of superlative interest and importance to the fruit-growers of California, we reproduce a paper dealing with it, from the pen of Prof. L. E. Henderson, of the Agricultural Experiment Station at Moscow, Idaho. The disease has got as strong a hold in Idaho as it has in California, and except for a few favored localities, of limited extent, it may now be said to be general all over our country.

The name "fire blight" is the proper one to use; it should not be called "pear blight," for two reasons. In the first place it is liable to be confused with the pear-leaf blight, a disease which attacks the leaf of the pear, and incidentally injures the fruit. In the next place this disease is not limited to the pear; it is fast becoming too common on the apple as well, in our State. Nay, in many States it attacks all of the pomaceous fruits, such as pear, apple, quince, crab, and hawthorn. Three years ago, this disease was unknown to the writer in the southern part of the State; to-day, there is hardly an orchard in certain districts which does not show some blight, and in many it is very serious. In northern Idaho it has been in our pear orchards for over ten years, but luckily it has hardly ever attacked the apple. From the devastation this disease is causing in the southern Idaho apple orchards, we can not expect that the northern portions of the State will be long exempt.

Though this trouble has been known as working havoc in orchards for a century or more, it is only in comparatively recent times that its true nature has been well understood. For a long period of years the discussions of this trouble were of such a theoretic nature, that many horticultural societies forbade its being brought up in their meetings, unless some one had something of absolute knowledge to offer about it. Various causes were ascribed for its presence, such as "sour sap," "atmospheric conditions," "soil conditions," and "effects of various fungi." In 1878, however, Professor Burrill of Illinois discovered the true cause and announced his discovery to the world. This was found to be a bacterial disease, due to the presence of myriads of little germs in the inner bark and cambium. The germ was called by Professor Burrill *Micrococcus amylovorus*, from the eagerness with which it siezes upon and devours the *starch* in these tissues. From the subsequent studies of Arthur at the Geneva Station in New York, and of Waite in the United States Department of Agriculture, we know how this germ or bacterium lives, reproduces itself and is *carried* from tree to tree.

Luckily the disease is a very conspicuous one, which renders its presence in an orchard the more inexcusable when well known. It affects twigs, leaves, young fruit, and even the branches or trunks. From the experiments of Waite, it has been found that it can not attack the plant through the *uninjured* bark or leaf. It can, however, gain entrance through any injured place on trunk, limb, or even leaf. Its most common points of entrance are natural ones. These are the young growing tips of the branch, the stigma of the flower, or the glands which secrete nectar. Therefore, the "flower blight," the "twig blight," and the "branch or trunk blight" are all forms of this disease.

In the first, the young twig, especially if it be growing rapidly, turns black in both leaf and stem, and wherever the leaves are blighted, they remain black and dead *through the ensuing winter*. This black, piratical flag is the surest evidence of its presence.

In the "flower blight" a whole bunch of flowers, or frequently *every* bunch upon the tree, will be affected, and dying back to the beginning of the spur, hold the blackened flowers and young fruit also through the entire year. This is the most common form on the apple.

Frequently an entire limb or even the trunk will be affected for only a short distance, while the top will still be entirely free from the disease, and this can only be understood when we speak of how the disease is spread.

More frequently upon the pear several limbs and even the whole trunk will be affected, and when this is the case the tree should be cut out root and branch.

If the young shoots of a tree affected with blight be examined, small drops of sticky, thick fluid will be found exuding from the edge of the diseased area. If one of these drops be examined with a high power of a microscope, myriads of little oblong bodies will be seen, some separate, some in short chains. These are bacteria. Arthur proved that these bodies, innoculated into a sound tree by a needle, would produce the disease; Waite proved to us beyond dispute that insects, especially *bees*, are the main instruments in their dissemination. They are attracted by the viscid sap, suck up part or all of the drop, and then carry thousands of these germs with them to innoculate flowers, shoots, or wounded places in the bark. Undoubtedly heavy currents of wind assist in spreading the disease and probably account for the commonness of "twig blight." The question comes right here: Shall I keep bees if I have an orchard? Certainly, and for two reasons: First, the honey, and the revenue derived from it, are often no small object to the farmer. Second, the bees are absolutely needed to assist in proper cross-fertilization or pollination of the flowers. This leads us to the subject of remedies, for *preventives* there are none.

As soon as the bacteria are carried to the young flower or the wound, they effect entrance, and living upon the sap and starch, multiply rapidly. If they gain entrance along a limb or trunk, they live in the *inner* bark and cambium layer—that layer which adds yearly to the growth of both bark and wood.

It can readily be seen from this that they are well covered, and consequently spraying does no good. *The only remedy thus far found has been and is the careful and continuous* *use of the saw and pruning knife.* All diseased shoots and limbs should be cut off at from six inches to one foot below the place of evident infection or injury, as the bacteria have always gone down deeper into the limb than *seems* to be the case from the outside. Many pruners have the habit of splitting down the bark *to see* how far the disease has proceeded, but this practice is to be condemned, as they never can see how far the disease has proceeded, and the incision of the knife may carry the bacteria from diseased to healthy tissues. If the blight is bad in either the pear or apple orchard, the knife or saw should be *sterilized* each time it is used, by either passing it through a flame, or dipping it into weak carbolic acid-water, or into kerosene. The pruned limbs or fragments should be collected and *burned* and both pruning and burning should be done mainly in the dormant season, before the sap has started, the bacteria have awakened, and the bees are visiting the orchard. This is the best time for pruning and burning, but not the *only* one; it should be done whenever the disease makes its appearance. All large wounds should be painted over with paint as soon as the tree is trimmed, to prevent the reinoculation through the exposed tissues. Where the blight is bad, even young shoots or water-sprouts should have their cut bases painted, for it has been shown time and again that the limbs and even trunks have been inoculated through these cut stubs.

The pear is much more easily pruned for this disease than is the apple. On the former it commonly manifests itself in dead or dying shoots, limbs, or trunks, which can readily be cut away below the progress of the disease. On the apple, however, it is commonly the shoots all over the tree, and *especially the fruit spurs and their clusters of flowers*, which are most affected. Pruning here becomes a much more difficult and even serious undertaking. Where only a few shoots and fruit spurs are affected these can be cut away close to the tree, and the wound immediately covered with paint. Where, however, almost all of the fruit spurs on the whole tree have died, the best way is to cut off entire and large limbs, cover the wounds with paint, and stimulate the production of new shoots and subsequent fruit spurs. Many such trees are to be found in and around Boise, New Plymouth, and many other places. In the former place my attention was called by Inspector McPherson to a very interesting though sad evidence of the efficacy of bees in spreading the disease. All the splendid large apple trees near the hives were without exception seriously injured by blight, while as we proceeded on radii from the hives the blight grew less and less, and almost disappeared on the edge of the orchard farthest from the hives.

It has been often noticed that rapidly growing trees are more subject to blight than slower growers, and that those in low ground or "swales" are more subject than those on drier ground. Orchards should therefore be planted on well-drained land, and should not be stimulated by too much water or too much fertilizer.

Though all of the varieties of the pomaceous fruits are subject to this disease, as said before, some varieties have been found more subject to the attacks of blight than others. Of the apples, the crabs of all kinds have been found very prone to blight. Among the pear, in most places, the Anjou, Angoulême, and Seckel are most resistant, Bartlett and Flemish Beauty are less so, while the Idaho, Clapp, and Winter Nelis are very subject to blight.

THE APPLE IN CALIFORNIA.

By FRANK FEMMONS, of Ahwahnee, Cal.

Some of the earliest recollections of my childhood are associated with a garden lot that had a few fruit trees in it—a plum, two or three peaches, and an apple tree that grew just by the well. How those bright memories still cling to the heart, and bloom to-day though their roots were planted more than sixty years ago!

I have never yet known a man, woman, or child that did not like a good apple; nor would I care to know one, as it would be so unnatural that it would scarcely be a curiosity—there would surely be something wrong with it. This universal taste has its roots far back in the infancy of our people, and the ages of association have fixed it as one of our greatest enjoyments. From central Europe the apple has gone with its people into every part of the world where it can be grown; and where it can not, our commercial lines are taking it to meet the demand—the apple has become a commercial staple.

Fifty years ago but few apples were taken beyond the neighborhood where they grew. A few were sent to some of the nearby towns, or a few choice ones to some friend a hundred miles away, if some conveyance should be going; but to grow, pack, and ship apples to the markets of the world was scarcely thought of. Like so many other of our productive industries, it has grown up with our railroad and steamship lines, and in some form or another is now reaching every part of the commercial world.

With the new conditions of distribution came new problems of production. The few trees on the two- or three-acre home orchard of our "boyhood's fond recollection" were planted to meet the home needs. Many of the old orchards were grown from the seeds and trees planted without grafting. Any apple was far better than none at all, and in many parts of our country at that time but few of the better varieties were generally known or obtainable. An orchard in which were found a few trees of Stanley Early, Sweet Bough, Rambo, Romanite, and Vandivere, and a little later, the Seek-no-further, was of high excellence, and I doubt whether to-day any of the new varieties can give more real enjoyment than did some of the older ones. Some of them are good apples yet, if grown where conditions suit them, and no home orchard is complete without them. Their juicy freshness seems to come to us from an almost forgotten past.

Just why the American apple, or varieties that have originated in America, are better than those produced in Europe, is an interesting question. It seems to be a fact that the better varieties of Europe when grown here have failed to give entire satisfaction. A few, like the Gravenstein and Ribston, seem to do well in certain limited locations; but except the Red Astrachan none of them has reached a wide planting in our orchards, and even that seems to be losing its popularity within the past few years. That our American apples are better is proven by the fact that they are so considered in the markets of the Old World and the demand for them there growing at such a rapid rate.

"American Fruits," giving "The Apple Situation" in its April number of the present year, has this to say: "Last year's crop was a large one, about 45,000,000 barrels for the United States and Canada. The demand from abroad has been very heavy—approaching 3,000,000 barrels. Exports have been 90,000 barrels per week, with prices high on the other side." Another item in the same paper, giving shipments of deciduous fruits from California: "Shipments of apples during the season of 1903 will reach from 1,900 to 2,200 cars." Another from the same paper (published at Rochester, N. Y.), in commenting on California fruit shipments: "In ten years hence California will be even less able to supply the demand than now. The Californian who looks ahead is planting trees and vines."

There was as much or more talk in our State in 1892 about the danger of overproduction of citrus fruits when we were producing about 80,000 tons than ten years later, in 1902, with an output of over 525,000 tons. Our horticultural and other papers from all over the country are full of the facts that demonstrate that the demand for all kinds of our best fruits is growing faster than production can as yet supply them. The statement was made two or three years ago that 2,000,000 barrels of apples were shipped from Boston to Europe in one month. All the country homes in the Eastern States from Maine to Kansas have their apple orchards, and in many places they are being planted for commercial purposes by the thousands of acres; but so great has become the demand for good apples in our towns and cities and for export that buyers are out into every section where it is possible to find a carload. People all over the world are fast learning that fruit is one of our food staples, and the natural or inherited taste of our people for the apple gives it the first place as the "king of fruits." Its many varieties, the many ways in which it can be prepared and used, its satisfying and health-giving properties, make it at once the favorite fruit of the rich and the poor.

I have rambled off in this line farther than intended. When one gets over the orchard fence and begins to gather up the history and facts of apple production and to compare the present with what we know of but a few years ago, and then tries to think of the future in the light of experience, the subject becomes one of intense interest. If the history and experience in other lines of productive industry were not almost bewildering in their new magnitude and possibilities, the faith so many have in apple-growing for the markets of the world would seem to be a fancy; but there is no fancy in the commercial facts of a world-wide demand and its supply. With the already created taste and the longing desire to satisfy it, the consumption of fruit depends upon its production and placing it within the reach of all, and the production must come first.

THE APPLE IN CALIFORNIA.

We have had many examples of the natural capacity of California for fruit production. Some of them have been the wonder of the world. Our oranges, raisins, prunes, pears, apricots, and peaches have stood at the head, and the fig is fast taking its place in the list. With one notable local exception the apple has received but little commercial consideration, and it would seem strange, too, when we know that many portions of nearly every county in the State have for years produced apples of fine quality, and from these portions of our State the product, wherever exhibited in the apple-growing sections of the Eastern States, have received the admiration of all.

There are but few varieties that do their best in our warmer valleys. The Astrachans and the White Winter Pearmain are perhaps the best for such locations. The possibility of finding or producing other varieties that will do fairly well is certainly encouraging. Nature puts a wide limit to its adaptation to environment; time and encouragement work wonders.

In the cooler climate of our mountain sections, many of the best varieties of the apple have long been known to reach to high perfection, and some of them grow here to their finest development in size, color, texture, flavor, keeping and handling qualities, that make them the best commercial apples in the world. From Julian, in San Diego County, up through the valleys and slopes of the upper foothills of the Sierra Nevada Mountains, and widening out over almost the entire northern portion of our State, are found climatic and soil conditions the apple delights in, and where it has been grown in small orchards for many years. Every little mountain home has its orchard—some with but a few trees, and at most but a few acres, and little attempt has been made to supply more than the local market.

Many varieties were planted that were found to be unsuited to the local conditions or for market purposes. Many that were known as among the best in some portions of the East were found to lose some of their best qualities when grown here. Some are found suited to limited locations, while some others seem to be suited, or adapt themselves, to almost any location or condition—some varieties reach their highest development at certain altitudes or where the local conformation gives a climate and temperature they need. At the higher altitudes, where will grow the finest Yellow Newtowns and Spitzenburgs, the White Winter Pearmain ripens before maturity and is never found at its best. Some varieties require for their best growth a heavy, rich soil, while others are better in a loose, poorer one, and all varieties show some peculiarity of adaptation to conditions of soil and climate that should be understood and applied in planting an orchard for best results. The want of such knowledge has been the principal factor in many failures and has injured the reputation of California-grown apples. If the facts along this line, growing out of the experience of the past forty or fifty years, could be gathered together, their general knowledge would be of great value in the horticultural development of our mountain country.

In both Europe and America the apple has always reached its highest development in the mountain or hilly sections, and in New Zealand and other portions of the world the same thing is true. The extent of our mountain country, the diversity of its climatic conditions, the productive richness of its soil, the abundant rainfall of the winter months, and the almost cloudless sunshine of our summers, with its proximity to the center of a commercial activity that is fast growing into one of the widest in the world, or that the world has ever seen; the already demonstrated fact that we can grow apples of the highest excellence over a greater section of the State, and the universal demand for them that has made them a commercial food commodity, would all seem to encourage their production here and give an assurance of a high reward.

Except for their mineral, timber, and grazing resources, to what other or better use can be put the thousands of now unproductive acres all through our mountain country? And what countless prosperous homes would be added to the growing wealth of our State! I feel confident that no other line of horticultural production offers a wider field, or gives a brighter encouragement for the future.

With the hope that it may aid in the effort of any one who may wish to plant an apple orchard in our mountains, I will give, in as few words as may be, some of the observations and items of interest growing out of an experience of the past twenty years. Perhaps none of them are new to many, but their knowledge was not always an easy thing to get when wanted, and their statement may help others.

Home Orchard is at an altitude of 3,000 feet, and its vicinity from 2,000 to 6,000 feet, which about makes the limits of the "apple belt" in central California. To the north and also nearer the ocean influences, similar climatic conditions are reached at a lower elevation, and except in the Sacramento Valley, extend over the entire northern part of the State. Wherever you find

> The forest-clad hills, where oaks and the pines
> Are mingled with shrubs and the wild-tangled pines,

there, you may be sure, the apple will grow.

VARIETIES.

Nearly every one has his personal preference. Our tastes differ, and we naturally like a variety. Apples ripen, or develop, at different seasons. Some varieties ripen and are gone by the end of July; others are at their best in the fall months; some in midwinter or spring, and others last until apples ripen again. Here, on my desk as I write, is an apple in good condition of last year's growing, and by its side a beautiful red one of this. We like apples the year round, and yet it is an easy thing to plant too great a variety. It is possible to get all the best apple qualities combined in a few that have proven themselves adapted to a wide range and always give satisfaction. Among the many hundreds of named varieties found in nursery and other catalogues, a list that would include the best only, for both home and commercial use, would be a short one—not over twenty at most, and if confined to half that number would lose very little. If selecting for a purely commercial orchard, the list might be divided again.

In trying to give a condensed list for California planting, I am well aware of the fact that many that have a high excellence and are the favorites in some places will be left out. The fact that so many of the best varieties when grown here in the genial climate of our California mountains reach such a high development of size, beauty, and excellence, makes the task to choose a few from the many a difficult one. If some three varieties—early, medium, and late—could combine the best qualities of all, the task would be simple. The effort that is everywhere being made to find some better apple is in this direction, but the hope may be expressed that the case supposed is beyond a possibility. There is one fact that is sometimes lost sight of in talking about apples adapted to different uses—that our best commercial varieties are just as good for any other purpose.

Our orchard homes and the general markets should never be without the best the year round. Perhaps the most widely planted and the most satisfactory of the early apples is the *Red June.* Its beautiful glossy red color and pleasant acid flavor make it the favorite early apple, and it seems to be at home in any location where apples will grow. It should always be planted near the house or where it can be protected from the birds. They have a great fancy for it and their judgment of a good apple is always reliable. There is another apple, the *Benoni*, that is sometimes called Red June, and trees are sold with that name, but it is not so fine in growth and is very subject to mildew.

Early Harvest.—A yellow apple beginning to ripen just after the Red June, and continuing through a long period, should be in every list of early varieties. Before they are gone the

Red Astrachan, a Russian apple, is ready for use. It was introduced into some of the Eastern States at an early date and has filled its place with credit in the pioneer orchards across the country. It has a very pleasing rich flavor—a little too acid in its fresh state for some to eat, but for all cooking purposes there are but few better.

Maiden Blush.—Gather it and put in a cool, dark place as soon as it gets size and color. There is no purpose to which an apple of its season can be put that it will not fill, and for drying it has no equal in the quality of its product. Though it is a good apple over a wide range, it reaches its highest perfection in the highest altitudes at or above the pine timber line.

Gravenstein.—If this apple was not so hard to please with its conditions of soil and climate it would certainly find a choice place in the list. It is usually more or less a failure in many places, but where it does succeed and bear well it is certainly a grand apple. There may be different strains of it, or even different varieties under the same name that would account for its poor showing in so many places. I feel like throwing in a strong caution and urging the importance of using every care in obtaining the best stock, both by our propagators and our orchard planters. I know of no better line upon which all our fruits can be improved.

Baldwin.—Perhaps no apple grown in California is as puzzling as this. From Michigan east to the Atlantic it is almost ideal in every quality that could be desired. In the West it is disappointing, but in the cooler locations it sometimes grows to a pleasing promise to redeem itself. In most parts of our apple-growing belt it is only a good fall or early winter apple. It varies so greatly in form, color, and quality that we are never quite certain that it is a Baldwin at all.

Rhode Island Greening.—In nearly every orchard we find a tree or two of this grand old apple, and as it grows in most parts of our apple-growing section no one need mistake it—it always shows its individual characteristics. It reaches its best development in the cooler locations, and when well grown has a wonderfully rich, satisfying flavor. It is among the best for all apple uses. Here in the West it loses its quality too soon after ripening and requires care to keep it until near Christmas, but repays any care that can be given it.

Yellow Bellflower.—Some are trying to give this grand old New Jersey apple a French flavor in the spelling of its name. No other apple is more distinctively American—it belongs to the sunny skies and pine woods of our whole country—its every characteristic is racy of the spirit of our western world. The tree and its habit of growth are not suited to locations where our heavy wet snows are liable to make a wreck of it, and the fruit is too tender for rough handling in long distance shipping, but in many locations it is a valuable apple.

Ortley.—A seedling of Bellflower, and like it, too tender for distant market. Its mild flavor and juicy texture make it a favorite about the holidays, when it is in its prime. It has gained a reputation in our local markets, and is known as the "Golden Pippin." The confusion is unfortunate and may lead to many mistakes. We have the American Golden Pippin, and the Grimes Golden, that take their names from their resemblance to the English Golden Pippin; but the Ortley, while not so deep a yellow in color or so acid as its parent, is a true Bellflower, and about its only offspring of any great merit. It is sometimes known as the White Bellflower—a very distinctive name.

Jonathan.—One of the very best of our red apples when well grown in a locality that suits it. It has the fault of bearing very full some years and then doing little or nothing others, and sometimes drops its fruit badly as soon as ripe. We have a great number of late fall and midwinter apples that are good while they last. The greater portion of them could be dropped from the list for general planting to the advantage of the better varieties and all apple-growers.

Esopus Spitzenburg is an apple that is almost universally known by its bright, rich red color and high juicy flavor. It grows and bears well in all sections, but finds its most congenial home in the cool, high, altitudes, where, if it has a deep, damp soil, it produces fruit that is a surprise to many who have known the Spitzenburg all their lives. At its best, it is large, heavily ribbed, and with a juiciness of texture that is pleasing in every way, but I have thought had not developed its highest flavor. The best I have ever seen were grown in the Yosemite Valley, and I have seen some good ones from Oregon. It is a hard apple to keep through the winter in our climate without becoming shriveled, and it loses badly if kept too long. While every one likes its flavor, many find it a hard apple to digest and some do not dare eat it at all in a fresh state; but if you like a good apple pie you will never find a better apple to fill it with, or a better one for any cooking purpose.

Northern Spy.—In every quality that goes to make up a good apple this would stand very high in any list; but its uncertain and irregular bearing in many locations prevents it from being a profitable one for general planting.

Winesap.—Has been planted and succeeds in all our apple-growing sections and has many good qualities. The persistent tendency of the tree to overbear soon reduces the size of the fruit and it becomes too small for general use. If an apple to make the best of cider is wanted no better one can be selected.

Paragon.—A seedling of Winesap. Though known for many years in Tennessee where it orginated, it is comparatively new in California. It is a good grower and forms a widespreading, healthy tree—strong and fine in every way. It does not come into bearing so young as some varieties, but makes a good crop every year, if any apple does, and the fruit keeps solid and firm until late; it is a good, satisfying apple to eat and is much larger than its parent—fully double in size. This apple has been confounded with another, the Arkansas Mammoth Black Twig—and also a seedling of Winesap. At one time the American Pomological Society thought them identical. The mistake was afterward righted, but the confusion led to many mistakes and disappointment.

Ben Davis.—I know of no other apple that is so much influenced by local conditions—soil, climate, and also by the stock on which it may be grown—as the old Ben Davis. Local modifications seem to produce many strains of it, and as grown in some locations it is certainly a poor apple and its reputation is sometimes deserved. It has been a great market apple over the greater portion of the West, and in its proper season is much better than it sometimes gets credit for. Here in the mountains it is in its prime from the beginning of February and is good for all purposes. The rough handling in packing and shipping long distances affects its color and freshness less than most other apples. Some that are the most beautiful on the tree and are among the best for home use or a near market lose much of their beauty, or quickly decay from bruises that can scarcely be avoided. Others are able to withstand much hardship—the Ben Davis preëminently so. This characteristic must always be a large factor in our commercial apples. One that can be packed and shipped to the different parts of the world and there open up with a bright, solid freshness and give a reasonable satisfaction to the greater class of consumers, has a value that should not be overlooked. The apple that will grow and produce over a wide range of planting and has the greatest number of other good qualities, combined with one of withstanding rough usage, is the ideal so much sought for by all commercial growers. We have an abundance of varieties that we can scarcely imagine how they could be improved for home use, but the perfect commercial apple is perhaps yet to come.

York Imperial.—Has many qualities that place it among our best apples—large, red, a rich flavor, and keeps fairly well. The bearing habit of the tree in producing its fruit near the larger limbs is valuable. Some individual trees bear very fine fruit and are productive in a regular annual way, while others seem to be shy or the fruit inferior. This habit or trait could, no doubt, be greatly improved with time, and by care in selection. If it could, and the irregular shape of the fruit be somewhat corrected, it would become one of our finest winter apples.

White Winter Pearmain.—The catalogue of the American Pomological Society drops the "Winter" from this well-known name. Few apples are more widely known, and when well grown there are but few better, or which give more universal satisfaction. The tree grows well over a wide range, but to develop the fruit best requires rather a warm location where there is not too much difference between the day and the night temperature—some slope of the mountain where the nights are warm. It very seldom fails to bear too great a crop and requires severe thinning.

Yellow Newtown.—Grown in a soil and situation that suit this apple, perhaps it more nearly combines all the excellent qualities than any other that has been produced. It originated on Long Island, and on the Atlantic coast is everywhere one of the best. It seems to reach its highest development in the mountain sections of Virginia and North Carolina, where it is known as Albemarle. Throughout the Mississippi Valley it is but little planted. Here on the Pacific Coast it seems again to find a home and produces fairly good fruit everywhere; but give it a rich clay soil, where the climate is not too warm, no finer or better apple for all purposes can be grown. If it had a bright, beautiful red color, and the tree took more kindly to a wider range of conditions, we could think of it as the masterpiece of fruit production.

It is unfortunate that another variety (the *Green Newtown*), quite similar in some characteristics, has been so often planted instead of the Yellow. Many do not recognize the difference until the disappointment comes at the maturity of the fruit. The Yellow Newtown takes on a rich yellow color, the Green never does, and is not usually so large or well formed.

The prominence commercial apple-growing has assumed in the Eastern States within the past few years has greatly stimulated the effort to find some better varieties for that purpose. The same line of production will undoubtedly develop here. Within the past ten years about forty new apples have been grown at Home Orchards to test their value and adaptation to our mountain fruit belt. Out of the number, two seem, from their behavior here and elsewhere, to be worthy of a wide planting.

Delicious.—This noble apple originated near Des Moines, in Iowa, which would indicate something of its hardness to withstand a rough climate. The tree is a strong, healthy, upright grower, the bloom hardy and not easily killed by frost, and bears every year; the fruit is all grown on spurs near the larger limbs, large, conical and prominently ribbed near the eye; color red, or a suffusion of light and darker red on a yellow ground; flavor somewhat similar to White Winter Pearmain, but more refined and pleasing, and its fine texture makes it an apple that any one can eat with comfort and pleasure. It is rightly named Delicious. In a cooler climate it would, no doubt, keep much longer, but here it should be gathered as soon as fully grown and colored, and kept in a cool place, when it will be at its prime at Christmas, though I have kept them sound with only usual care until April.

Black Ben Davis.—I wish this grand apple had a name that more nearly fitted its individuality. All that could be said in praise of an apple would seem to have been exhausted in talking about this one. It is a seedling of the old Ben Davis and originated in the Ozark Mountains of Arkansas—a region of country that has produced many varieties of excellent apples, and the promise for other and better ones is encouraging.

In habit of growth and foliage the new apple shows its parentage, but the tree is inclined to become more spreading and with a heavier, darker green foliage; fruit rather larger, more juicy and less of the peculiar Ben Davis flavor—a better apple in every way and besides has the most beautiful deep red color of any apple grown. "As beautiful an apple as ever grew since Eden days—noble, royal, magnificent in beauty, an apple that for pure splendor of appearance and fruit-producing capacity has no parallel in American orchards."—Parker Earle. From every apple-growing section from New Jersey to Colorado and from California to British Columbia, Black Ben Davis has received the highest praise, and its friends are everywhere delighted with it.

A mistaken belief of some that it was identical with an older known variety of the Ben Davis family of apples has led to an unfortunate controversy and has no doubt caused much confusion, and great care, as in the Yellow Newtown, should be used in obtaining trees of known purity.

I have thus given a list and said something of twenty different varieties that seem to be the most reliable for bearing, or have qualities of fruit that are desirable and generally found good over the greater portion of the State. The same general conditions are found through Oregon, Washington, Idaho, and into the British possessions. If required to divide the list and to retain ten varieties for a general orchard that would contain only those with the best qualities and give a succession through the entire year, they would be varied perhaps in some locations: Red June, Early Harvest, Maiden Blush, Rhode Island Greening, Delicious, Yellow Bellflower, Black Ben Davis, Paragon, White Winter Pearmain, and Yellow Newtown. They would ripen or come to maturity about in the order named. Then, out of these ten can easily be selected a fewer number, if desired for a purely commercial orchard. If where the Yellow Newtown would do its best, an orchard nearly divided between it, Black Ben Davis, and Delicious would be something near the ideal for simplicity, utility, and profit.

MARKETING CALIFORNIA FRUITS IN EUROPE.

At the request of a leading fruit-exporting house in New York, the Secretary of the Department of Commerce and Labor issued a circular to the United States consuls in different parts of the world asking them for information relative to American fruits in their districts. Answers were received from all these, and the Department has issued a separate consular report containing them, from which we quote the following paragraphs relative to California fruits and of direct importance to our growers.

We have long known France was a heavy customer for California prunes and that our fruit, after being shipped all the way to France, was reprocessed and repacked there, returned to the United States, paying a heavy import duty as French fruit, and was offered for American consumption in competition with our own goods. That this is possible seems somewhat strange, but can probably be accounted for in two ways: the more attractive package in which it is offered as French fruit, and the disposition on the part of a great many consumers to prefer anything coming into our country with a foreign name. With the latter class, in the case of fruit of the same quality selling side by side, they would select the foreign package, paying a higher price for the same article. With the other class, those who are attracted by the package, this should not be the case, and it is possible that if our packers would take a hint from the French packers and put up their fruit in the same way, we could supply a large part of that demand which we now only have through French channels. The average purchaser is willing to pay for looks. An article that is nicely packed in attractive shape and is clean in appearance will get the price where fruit put up in unattractive boxes will not. We quote the following from Albion W. Tourgee, Consul to Bordeaux, France:

> I have the honor to acknowledge receipt of a dispatch asking the exact meaning of my statement that "California prunes are imported to Bordeaux and there repacked to maintain the superiority of French prunes."
>
> The following is the paragraph in my annual report which I suppose to be that referred to:
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> "The failure of the prune crop would have entailed very serious consequences on the trade of this region but for the large stock of California prunes which were held over from last year, and the sagacious enterprise of French dealers in securing early control of this year's crop on our Pacific coast. Bordeaux is the real center of the prune trade of the world. The methods of preparing this fruit practiced here are so superior to the manipulation it receives elsewhere that California prunes brought here and repacked maintain the superiority of French prunes and are re-exported in large quantities to the United States, where they compete successfully with the American fruit which has not incurred the cost of a double exportation."

I can not imagine anything more explicit. Last year (1903), for instance, there were almost no prunes raised in this region, probably not one twentieth of a normal crop. The deficit was supplied by the importation of prunes grown in California and Oregon. This fact I know from having been required to inspect the condition of such importations and afterward take testimony in litigation resulting from controversies over the quality and salability of such prunes.

Though the prune crop of this region was so small as to be almost a negligible quantity in the markets of the world—not enough, in fact, to supply the home demand—the export of French prunes was not materially lessened. A considerable portion of this exportation was to the United States, amounting to 95,000 francs ($18,335), in the last six months. I have been unable to learn that any were shipped as "California prunes." None passing through this consulate were invoiced as such. French prunes are shipped in much smaller boxes than the California product and are so different in appearance that it would be absurd for a Bordeaux merchant to send out California prunes to fill his orders without repacking and reworking.

The chief difference between California prunes and French prunes as they come from the growers' hands is that the latter are "cooked." I have seen a few shipments of California prunes which seemed to have undergone some sort of process to simulate the appearance of French prunes. I do not know what it was, but official experts here concluded that the prunes had been steamed and that some viscid substance like glycerin used to give the peculiar glistening appearance of the best French product.

The French prune is the result of moist conditions, almost always ripening in a rainy season. It is possible that this has something to do with the difference in the result of treatment. The French prune is allowed to remain on the tree until it is thoroughly ripe and soft. Very often a considerable portion of the crop falls of its own weight.

When picked the prunes are placed on shallow crates, just touching one another, and the crates are then put into stone ovens raised to a temperature of about 40° C. This very moderate heat is intended to remove the moisture of the prunes so gradually as to avoid breaking the skins by explosion. They remain exposed to it for several hours, according to their condition, and are then removed and allowed to cool. When entirely cold they are replaced in the oven and the temperature is raised to 80° C., and after a sufficient time they are again taken out and allowed to cool, after which they are replaced and the temperature is raised to 90° or 100° C., the whole process occupying from thirty to forty hours.

This treatment leaves the fruit soft, so that the stone is easily slipped out, and the skin has the glistening appearance always sought in this class of prunes. This is claimed to be the result of the bringing of the saccharine to the surface by the long process of heating and cooling alternately. The prunes are thoroughly cured, and are not liable to become dry or hard.

After this treatment the fruit is sorted and packed in 50-pound cases and sold to the wholesale merchants and exporters, and by them it is again sorted and put up in small boxes with various ornamentation. Prunes which are exported to the United States are sometimes packed in jars. They are used as sweetmeats and employed in the making of confectionery—not for cooking purposes. These require a special preparation, which is a trade secret, probably varying with the different manufacturers. It is believed that California prunes are dried in the open air, or at a much lower temperature than are French prunes, and so are fitted for consumption, not as sweetmeats, but only when stewed or otherwise cooked as a table dish. The smaller sizes are usually dried and used for the making of jams and other fruit comestibles.

The ovens which are used in the curing process to which prunes are submitted here are of various sorts, some being of stone and others of metal, but there is nothing special about their construction requiring description. They are simply ovens with bars or flanges to support the crates of fruit. This method of curing produces an altogether different result from that brought about by the mere drying process applied to California fruit. There is no doubt that the importer of California prunes prepares them for sale or export by a process of practically the same character. Precisely what it is I am unable to say.

Under the caption of "How to Increase Trade," A. M. Thackara, our Consul at Havre, says:

When the exports of American prunes to France began to reach large proportions two or three years ago, the quality and packing gave rise to few or no complaints. The fruit was well prepared, the "count" and the weight were always correct, the packages were strong and neat, and the whole appearance of the goods was as attractive as that of the French fruit. The enormous expansion which has taken place in the trade during the past season has led to many abuses. While some of the best brands have been kept up to their former reputation, a number of new firms have appeared in the market, whose goods are not up to the proper standard. They have attempted to secure trade by means of attractive prices, which could be offered only by packing low-grade fruits, giving short weights, wrong "counts," and cheap and defective packages. Another and serious abuse which has crept into the trade is the selling and branding as Santa Clara prunes fruit which is grown in other districts. This fruit is of an inferior quality, and can be purchased for considerably less than the genuine Santa Clara product. The difficulty of detecting the fraud has facilitated this dishonest trade, but the result will undoubtedly be that the Santa Clara district will not only lose its reputation, but also the premium which its prunes have hitherto commanded. The French buyers, recognizing the impossibility of protecting themselves against these deceptions, will cease to give the preference, at any difference in price, to the Santa Clara product, and the value of the latter will be brought down to that of the poorer qualities.

A careful system of State inspection, the issuing of certificates from the place of production, and an official branding of the boxes would possibly improve the situation. This matter is of the deepest interest to the fruit-growers of the Santa Clara district. If they do not act quickly, and take steps to prevent a disloyal competition, they will find that their trade will slip away from them.

The trade in France in American dried and green fruits depends, of course, to a great extent upon the greater or less abundance of the French crops. The failure of two domestic prune crops in succession led to the exceptionally large importations of California prunes in 1903–04. A normal crop this season would result in a decided falling off in the imports next fall. Nevertheless, the California prune and apricot have obtained a footing in this country, and it is reasonable to expect that even in years of normal domestic production the American fruit will find some sale in France, provided prices are low enough to allow competition with the home product. In such seasons more than usual care will be necessary in the preparation and packing of the American fruit. The Frenchman is under the impression that the native-grown fruit is superior to that which comes from California. The American packer should therefore endeavor, by careful selection, preparation and packing, to reduce the results of this handicap to a minimum.

Dishonest and unscrupulous methods, such as false designation of the district of growth, packing of inferior goods in the middle of the boxes, wrong "counts," short weights, untidy and unattractive packing, poor quality of boxes, etc., will certainly tend to put a stop to the trade in years of bountiful production in France.

From St. Etienne, Consul Hilary S. Brunot writes as follows:

From inquiries as to the condition of the market here in American dried fruits, it seems that for the past year or two the prune crop has been almost a total failure in France, and to supply the ever increasing want the foreign prune has been in great demand.

The sources of this fruit are California and Bosnia, but preference is given to the American product. I have been told by one of the largest wholesale dealers here that the American importation is so considerable that the prune-growers in the department of the Lot and Garonne (the garden for this kind of fruit) are complaining of the foreign competition and are appealing to the Government to have the duty raised, as the foreign product can be sold cheaper in the country than the home growth, in spite of the freight charges and the profits of the middlemen.

The prices of the American prunes vary, according to quality, between $19.30 and

$13.03 per 100 kilograms (220.46 pounds) at Bordeaux or Havre. About twenty per cent for freight and profits is added to the above prices before arriving to the retail dealer, and finally the consumer pays from 10 cents to 18 cents per pound.

A considerable quantity of prunes come also to France from Bosnia, but there is a certain drawback to this commerce, as not less than ten tons can be ordered at a time.

Apricots from the United States are beginning to have a market here. Hitherto this kind of dried fruit was regarded with a certain distrust by the public, but the confectioners have always used it very largely. At present, however, apricots are being bought by the public as an article of food, and I have been told that the demand for them is increasing a little every year. On the other hand, dried pears and apples are not known enough to be appreciated.

Canned fruits are in favor during winter and spring, as restaurant and hotel supplies and for use in pie and pastry shops, but none are imported directly.

Benj. H. Ridgely, Consul at Nantes, contributes the following information, which contains some excellent hints in regard to packing our fruit and extending our markets:

About 200,000 cases of California prunes and apricots were received in Nantes during 1903. Of these about nine tenths were prunes. The demand was unusually large, owing to the almost complete failure of the local fruit crop, but in any and all events American prunes are popular here and the demand for them is sure to be steady, nor is there much likelihood that last year's prices will drop materially this year. France can not produce sufficient prunes for her own consumption (to say nothing of the considerable European demand for her fancy confectioned prunes), and American prunes, known here exclusively as "California prunes," may be regarded as a fixed staple of the French grocery trade. Prices during the past year have been about as follows: Prunes in cases, from $11.58 to $14.66 per 220 pounds. The $11.58 quality contains from 60 to 70 prunes to the pound, and the $14.66 quality from 40 to 50.

The prices of apricots per 220 pounds were: Fancy, from $22.26 to $24.24; extra, from $21.62 to $24.12; choice, from $20.26 to $22.77.

Purchases of dried apples and California prunes are generally made direct from the exporters and commission houses in the United States, though there is considerable buying from the French importers and brokers at Havre. Goods are almost invariably bought c. i. f. Nantes, and are generally paid cash against shipping documents, though some sales are made at sixty days' sight. The American exporter of dried fruits who would give his foreign buyer the right to examine the merchandise before paying for it would be popular here, but he might suffer in the long run. French buyers, indeed, insist upon this concession, but American exporters have up to the present time been loath to accord it, though, none the less, some of them who know their customers well do so.

Deliveries of dried fruits from New York are generally made with satisfactory promptness, but there is considerable complaint that California fruits are much too long on the way.

The packing of American fruits is regarded here as very defective and unsatisfactory. This is particularly the case with the dried fruit which comes in barrels. The heads or bottoms of the barrels are frequently stove in on arrival, and as a consequence the fruit not only suffers from the entrance of dirt and dust, but is often wasted or stolen. It is also suggested that the barrels ought not to be packed so full as they generally are, for the reason that the fruit, either from fermentation or other cause, frequently swells and produces very strong pressure. This might be prevented if the barrels were not filled quite so full.

Importers here in any event insist that the heads and bottoms of the barrels be so constructed or supported as to prevent them from being so easily stove in. It is also complained that all the fruits arriving in cases, such as prunes and apricots, evaporated peaches, pears, and apples, are badly packed. Indeed, according to the statement of an importer with whom I discussed the matter yesterday, it is rare that a case of fruit arrives from the United States without some part of the immediate cover missing. As a consequence the fruit suffers from the contact with the air as well as from dust and dirt. It is recommended that all cases of fruit be girdled with light iron hoops.

As I have said above, the demand for American dried fruits depends largely upon local fruit-crop conditions. Importers and brokers here fully understand now that American dried apples, apricots, and pears will give their clients satisfaction, and since they have already got into touch with some of our importers, largely through the medium of this consulate, they know fairly well how to buy our fruits when they see an extraordinary demand for it. Our importers would of course do well to make themselves known here either by traveling representatives or by direct correspondence, but I repeat that sales will always depend upon local crop conditions and prices. Whenever there is a direct line of steamers from Nantes to New York, in order that shipments may be received here without transshipment, it would be advisable to establish an American fruit exchange at Nantes. Such an exchange must exist sooner or later in France, and with direct communication with New York, Nantes would be the very best port for it. In regard to California prunes, they already hold the French market, but sales could be largely increased through the efforts of traveling representatives speaking the French language. The same may be said of California canned fruits.

An American fruit exchange, operated by Americans, is the thing most needed in France, however.

Consul Lieber, writing from Dusseldorf, Germany, speaking of the tendency to send trashy stuff to the foreign market, says:

Another complaint of importers of American fruit is that, of late, shipments of goods of very inferior quality are becoming of frequent occurrence, and are a cause of annoyance, embarrassment, and loss to importers. These shipments come from that class of unscrupulous elements which is mingling with the honest export trade, and is very apt to spoil the whole business in a country like Germany, where authorities as well as the population are very particular with regard to the quality of any article of food, and where every retailer is personally liable to fines and imprisonment for selling goods proclaimed as adulterated or detrimental to health by the court chemists. German importers propose that in the interest of honest exporters the names of those trash exporters should be made known to consulates and chambers of commerce, so that German importers may be warned against those firms who by their way of business merely promote the interests of those parties in this country who are interested in keeping away any foreign fruit, and are never ceasing in their efforts to discredit any foreign, and particularly American, fruit, and throw all kinds of impediments in the way of importers of those goods.

From Amsterdam, Holland, Mr. Leopold Hertz writes to United States Consul Hill, in relation to California fruits, as follows:

As I handle only dried, evaporated, and canned fruits, I beg to report as follows on these different articles, viz: (1) California dried fruits; (2) Apples (sun-dried and evaporated); (3) Canned fruit.

California Dried Fruits.—During late years the sale of California dried fruits has largely increased in this country. Owing to the failure of the prune crop in France in 1902 and 1903, and in Bosnia in 1903, very large quantities of California prunes have been brought here, considering the limited size of the population of the Netherlands—5,500,000. Besides, the quality of the Santa Clara prune has very much improved, therefore it is a pity that unfair shippers pack outside prunes under the Santa Clara brand, thus hampering business for honest firms. Legal regulations would do a lot of good in this matter.

Apricots are largely bought here. The sale of pears has increased of late years. Of peaches and silver prunes only small quantities are bought. Nectarines and plums are practically unsalable.

Formerly the bulk of California dried fruit was bought from New York commission houses, but lately at least three fourths are bought from California direct.

The packing by the honest shippers is liked, but with some others it is better not to look too far below the surface.

Goods are sold c. i. f. Amsterdam or Rotterdam, three days after document, with one per cent discount, but many buyers prefer to buy on New York sight net, documents against acceptance.

The goods which could easily be here in four weeks take, when they arrive without delay, six weeks, but are often two or three months on the way, and this has a very bad effect on the sale of California goods, especially prunes. These are shipped in October and November, and then there are always such big quantities to be shipped that the shipments take two or three months. I have often written about this to California, and I quote one of the replies:

"As we have previously informed you, we have done everything possible with the railroad company to insure an early delivery of our shipments at destination, but the railroad and steamship facilities are inadequate for the business offered and delays are inevitable. Whenever we raise a question respecting delays with the transportation companies the railroad company places the blame on the steamship company and the steamship company on the railroad company."

The principal way to increase the trade is by arranging that goods shall be here in four weeks. Qualities, packing, etc., are satisfactory enough.

Evaporated or Sun-dried Apples.—Prunes as well as off-grade evaporated apples are largely bought here. The same can be said of sun-dried apples, but this last grade has suffered from the competition of Canada. Sun-dried apples produced in the United States are of three grades, viz: Southern, the lowest; Western, middling; and New York State, the best. Now, especially this year, Southern and Western apples are very difficult to sell, as the Canadian apples were very cheap ($5.82 per 110 pounds c. i. f.); these apples being of excellent quality, purchasers preferred to pay 40 to 80 cents per 110 pounds more for them than to buy lower grades.

Purchases of evaporated and sun-dried apples are usually made through New York, but of late years some evaporating factories in the interior are working direct and have done a pretty large business. The writer hereof is open to represent a large evaporating plant and can promise a good business.

Terms of payment, three days after documents, with one per cent discount, or New York sight draft, documents against acceptance; price to be calculated c. i. f. Amsterdam or Rotterdam.

The consumption of apples has decreased, I think on account of the method here of canning vegetables in 5-liter tins and selling retail by the pound.

Canned Fruits.—Canned goods are not used largely in Holland, owing to a duty of $10.95 per 220 pounds. Most purchases are made from Liverpool in 25 to 50 box lots. Payments are made in three days after documents, c. i f. Amsterdam and Rotterdam.

Shipments by Kosmos Line are three and four months on the way.

This trade could be done direct from the United States if the writer could only get good offers, but till now the offers made direct from California in canned fruits were such that it was cheaper, or at least as cheap, for purchasers to buy 50-box lots in Liverpool If offers were made of a good brand in canned fruits at a good price I might be able to sell from 2,000 to 3,000 boxes to one firm. The same can be said of salmon shipment by Kosmos Line. Only red salmon is salable here.

Owing to the failure of the apricot crop in France in 1903, California apricots were bought here for the first time. An objection, however, is heard against the packing in 1-gallon tins, as here the people are accustomed to 5-kilo tins (11 pounds). Further, the French article is much preferred, because it contains more half apricots and not so much water.

REPORTS

OF THE

COUNTY BOARDS OF HORTICULTURE.

REPORTS OF COUNTY BOARDS OF HORTICULTURE.

ALAMEDA COUNTY.

NILES, CAL., October 25, 1904.

To the Honorable State Horticultural Commissioner:

SIR: The output of fruit for this county has been considerably below the average this year; the long-continued rains in the months of February and March while the fruit trees were in blossom proved disastrous to many varieties. Apricots, almonds, pears, and peaches were the varieties that suffered most, many orchards having only one tenth of a crop; but as a general proposition the good prices partly compensated for the reduced quantity.

The amount of nursery stock handled at this station annually ranges from 900,000 to 1,000,000 plants, both fruit and ornamental, nine tenths of which is produced by the California Nursery Company.

The appearance of the orchard trees and the fruit has as usual been very satisfactory in this district, which comprises two townships. Since 1893 there has been no spraying done in any of the orchards, the scale being kept in subjection by beneficial insects.

We have but two kinds of scale to contend with (the San José scale and the cottony cushion scale are things of the past, having each succumbed to its parasite), viz., the black scale and the brown apricot scale. The first is, however, controlled by the *Rhizobius ventralis.* It is a beautiful sight to see the grand old olive trees, now about sixty or seventy years old, at old Mission San José, towering from forty to sixty feet in height, with their bright, clean foliage, whereas a few years ago they bore an unsightly appearance due to smut.

Scutellista cyanea, the South African internal parasite of the black scale, has been successfully introduced, and this year uniformly distributed throughout the deciduous orchards of the districts. The insects will no doubt produce good results the coming year. I find them on the sheet while collecting *Rhizobius* in the orange and olive groves. The *Rhizobii* are very scarce this year; in fact, I can not find five where I could collect one hundred last year. They have about cleaned out the black scale on the orange and olive trees, and have emigrated to the deciduous orchards.

The brown apricot scale (*Lecanium armeniacum*) is kept under complete control by its parasite, *Comys fusca,* every orchard having been fully supplied with them, with thousands to spare for distribution in other counties.

I am sorry to again report the appearance this year of the "brown rot of stone fruits," a parasitic fungus known as *Monilia fructigena*. While not as destructive as in 1902, yet there was considerable loss in some apricot orchards. I also found a few indications of it among cherries; but as this fruit ripens early when the atmosphere is dry, no losses occurred. In other stone fruits there was very little of it to be found.

The following figures will show the amount of certain kinds of fruit, etc., raised in this district last year. Not having the figures for this year, I have no hesitation in incorporating it in this report as a means of showing the extent of the fruit industry of Alameda County. The fruit is the product of one township, and the beets that of two:

Variety.	Ellsworth Drier.	Home-Dried.	Sold to Canners.	Value.
	lbs.	*lbs.*	*lbs.*	
Apricots	1,548,219		1,032,146	$31,900 16
Prunes	1,701,372	200,000		20,561 78
Prunes (Silver)	114,504	38,168		2,374 05
Peaches	15,629	7,800		1,104 42
Almonds	281,516	10,000		23,521 28
Walnuts	28,607			2,766 50
Cherries			300,000	12,000 00
Beets				208,140 25
Total value				$302,368 44

In the previous year (1902) the value of the fruit alone from the same territory was $135,850.85. There are very few peaches raised in the district and they are getting less and less every year, as the orchardists have found them an unprofitable crop, owing to the demand of the canners for large irrigated peaches. The Royal Ann cherries raised here are pronounced by buyers to be the firmest-meated fruit of any locality in the State.

Respectfully submitted.

WM. BARRY, Secretary.

FRESNO COUNTY.

FRESNO, CAL., October 25, 1904.

To the Honorable State Horticultural Commissioner:

SIR: The Horticultural Commissioners of the County of Fresno submit herewith their report for the year 1904.

Fresno County is known quite generally as the center of the raisin industry of California; but while more than one half of the raisins shipped out of the State are grown and packed in this county, yet this great industry does not represent the entire horticultural field by any means. Even grapes, other than those used for raisins, are produced here in quantities sufficient to place Fresno County among the leading counties of the State in the shipment of table grapes, and the largest producer and manufacturer of sweet wines and brandies.

We have no reliable data from which to give the actual acreage planted in vines, but from the estimates furnished by the California Raisin-Growers' Association and the California Wine Association we are safe in making the statement that at this time there are 100,000 acres in bearing vines and 25,000 acres in non-bearing vines.

Three years ago there was a scare among our vineyardists about phylloxera, but we are glad to report that no harm has been done and that the vineyards reported infected are in better bearing condition than ever before.

At the beginning of the packing season our vineyards promised the largest crop in the history of the county; but owing to the early rains and continued showers later on, the raisin crop was damaged about one half, and a crop of 2,000 cars is a conservative estimate of what has been saved.

We have at this time about 6,000 acres of peach trees in bearing and about 4,000 in non-bearing trees. The crop this season has not been over sixty per cent, owing, we believe, to the heavy rains at the time of blooming. Our orchards have not been able to supply in sufficient quantities the demands of the canneries for early and late cling peaches, and the canneries, as an inducement to growers to plant more of these peaches, are offering remunerative prices on long-term contracts.

The fig industry is in a prosperous condition. The acreage is increasing rapidly, and the curing of this fruit bids fair to be one of our leading industries in the near future.

A conservative estimate of the value of the green and dried fruits shipped from this county is fully $2,000,000 annually.

The orchards of the county are generally well cared for and reasonably free from insects and diseases.

Respectfully submitted.

C. W. CHAUNCEY, Secretary.

HUMBOLDT COUNTY.

EUREKA, CAL., October 25, 1904.

To the Honorable State Horticultural Commissioner:

SIR: We beg to submit herewith the annual report of the Humboldt County Board of Horticultural Commissioners.

The principal fruit crop of this section, and the only one that attains commercial significance, is apples. For a period of years there has been a constant but slow increase in new settings, which have been partly offset by the uprooting of old and neglected orchards. The total yield, which would under ordinary conditions show an increase, will this season fall short of previous averages, owing to a light crop. The quality is excellent and the condition of orchards generally is very satisfactory, showing a continued improvement.

Insect Pests.—Nothing serious in the way of insects is affecting our fruit. This applies especially to the sections producing the fruit that is marketed and shipped. The Eel River Valley orchards are almost entirely free from pests of any kind. Woolly aphis is found to a limited extent. In the remote sections San José scale had taken quite a hold, but under proper treatment it was found to yield readily and has been rapidly decreasing. Heretofore it had been difficult to induce those who had orchards which yielded no pecuniary benefit to apply proper remedies, but during the past year good progress has been made.

The distillate spray has shown good results and has gradually displaced the washes heretofore applied.

Codling-moth exists to some extent among the few scattered orchards in the Hoopa and Orleans sections, but careful vigilance is maintained to prevent infested fruit from entering the valley belt.

Fungus.—Fungus prevails in the entire apple section, causing more or less apple scab on the varieties susceptible to this growth. It has of late decreased rather than increased, due probably to greater care being bestowed on the growing trees. In some cases Bordeaux mixture is being applied.

Quarantine.—Three quarantine guardians are maintained; one permanently at Eureka to inspect fruit incoming from San Francisco and other sections and to prevent the marketing of home-grown fruit that is infected. Considerable fruit is condemned during each shipping season, mostly pears. A system of reports is adopted which shows each day's receipt of fruit of all kinds, with the name of shipper and consignee, also stating what was found on such fruit as did not pass inspection. These reports are presented monthly to our Board.

Fruits.—Pears are grown to some extent, also peaches. The former are very much subject to scab. The latter are considerably affected with curl leaf, but in the warmer belt fine peaches are grown and with the application of Bordeaux mixture the quality will improve. Plums and certain varieties of cherries thrive well. Prunes are being neglected, because unprofitable to raise in this section. It can be safely asserted that Humboldt fruit is far above the average as to freedom from infectious diseases. The apple crop for this season while considerably below the average in quantity is of exceptionally fine quality.

Respectfully submitted.

J. E. JANSSEN, Secretary.

LASSEN COUNTY.

JANESVILLE, CAL., October 27, 1904.

To the Honorable State Horticultural Commissioner:

SIR: The County Board of Horticultural Commissioners for Lassen County beg to submit the following report:

We have had an exceptionally favorable year for all kinds of fruits grown in our county; but we are a long distance from market, our apples (our main fruit crop) have been greatly injured by the codling-moth, and the transportation charges have been excessive, so that the combination gives but very small returns to the orchardist. We are looking forward to the time when better railroad facilities and a better market will make the fruit business a matter of great importance in the aggregate business of our county.

Respectfully submitted.

G. W. MEYLERT, Secretary.

LOS ANGELES COUNTY.

To the Honorable State Horticultural Commissioner:

SIR: In accordance with the provisions of Section 4 of the Act relating to County Boards of Horticulture, we herewith submit our annual report regarding the condition of the orchards of Los Angeles County.

The preceding year has been one of unusual favor to the growth of citrus fruits, the season just closing having produced the largest orange crop in the history of the industry. Apples and peaches were poor, apricots of diminished yield, grapes, berries, and walnuts of fine quality and abundant quantity. In the cultivation of vegetables, cantaloupes, and melons great progress has been made, the business passing largely into the hands of American growers and consequently leaving the Chinamen; or, at least, the increased demand is being supplied by our own farmers. The rainfall of the year, while somewhat below the average, came late in the season, giving the effect of a much larger precipitation for the maturity of cereals and unirrigated crops of fruit. In all, the season has been favorable to the fruit-grower, the stress of water scarcity being relieved early by a series of mountain rains and the consequent early rising of the surface flow of the mountain streams.

With the heaviest crop of oranges ever produced in the State, prices for Navels at the beginning of the season and during the first months of the year fell far below the average of other years, rallying materially in April and closing far more profitably with the later shipments. In certain localities in the county where organic nitrogenous fertilizers have been applied too freely in the last few years, Navel oranges have shown a decided tendency toward early decay and poor carrying qualities, even when marketed in the first part of the season. This tendency was increased, also, by the shallow cultivation given in some cases and the consequent hardpanning of the soil. In many instances our reports show that in groves otherwise given the best of care the roots of the trees below this crust have not been reached by irrigation during the entire season. Our Board has thought this condition of such importance as to justify calling the attention of the orchardists thereto as the cause of much inferior fruit. With the exception of the small ratio of orange groves in each neighborhood that have not been properly cultivated and irrigated, the orange trees of Los Angeles County never before looked so vigorous, nor were in better fruiting order than at the present time. The Commissioners and Inspectors, while going about their official duties, have made note of the apparent deficiencies in cultivation and fertilization, and the results of these observations have been published. These reports have had influence on the methods employed in the care of orchards, and show that treatment good for one variety of oranges is not necessarily good for another, especially as between the Washington Navel and the Valencia Late—the two principal kinds grown in the citrus fruit centers. They show that over-fertilization of the former orange with raw nitrogenous manures will induce puffiness, poor keeping qualities, and general inferiority, while the same amount of these fertilizers has little or no bad effect upon the Valencia Late. Other cultural questions have been considered and all the reports filed for the use of individuals and the fruit-growers' organizations that meet in the office of the Commission.

The production of lemons has been abundant and the fruit of finer quality than usual, with the industry profitable where the lemons are handled by large organizations from the orchards of large growers. There has been no particular advancement in the cultivation of other citrus fruits, which are of small importance compared with the growing of oranges and lemons.

The condition of the apple orchards has not improved during the year. For three years the apple-growers of the county have met with the Commissioners six or eight times annually, at which meetings insect pests and remedies, quarantine regulations, and methods of culture have been discussed and systematic efforts made to better the condition of the apple orchards; but with all these efforts last season's crop was very unsatisfactory, the quality and yield falling far below the average of former years. This is largely owing to the unusual abundance of codling-moth and the prevalence of extreme heat during the past summer.

Owing to the heavy attack of the peach-twig borer and the climatic visitations inducing sour sap and other maladies, a general debility of the peach trees of the county has been noted during the season, making the peach crop a failure, with a few exceptions where care and conditions have prevailed and given exemption from pests and disease.

Many fine crops of apricots have been grown the past season, followed by very satisfactory prices and leaving the trees in good form for another crop.

The berry-growers and small-fruit producers have had a profitable year, the retail trade demanding practically all the fruit the local growers could produce. Some of the largest strawberry-growers have found market for the entire output of their fields through one retail agency.

The grape crop was abundant and of exceptionally fine quality; but the prices for wine grapes have ruled so low that the business of vine-growing has assumed a very discouraging phase. There has been no change in the status of the California vine disease during the year, a few specimens being affected in almost every vineyard, but in no case has the malady assumed an alarming form.

An enormous yield of walnuts is now going to market, of a quality never so good before. Contrary to expectations the blight has done very little damage to the nuts, and none to the spurs that are to produce the next crop, this condition promising a great crop for 1905. The prices for nuts are very favorable, and altogether the walnut business is in a flourishing condition.

The vegetable men, especially the growers of melons, cantaloupes, and cucumbers, suffered materially from the depredations of insect pests during the first part of the year, but the usual climatic vicissitudes and the presence of predaceous insects controlled the pests effectually as the fruiting season advanced. The year has marked a heavy advance in the acreage of vegetables grown throughout the county, the industry passing largely into the hands of the American gardener. A heavy increase in the population of Los Angeles and suburban towns has stimulated the production of fruit and vegetable crops and enhanced the value of the land where they can be grown.

INSECT PESTS.

Generally speaking, the past year has been one of unusual activities of insect pests upon the fruit trees and vegetable fields of Los Angeles County; yet in some cases there has been a marked diminution in the damage done by pests usually prevalent. It has proved a season of great immunity from the attacks of the red spider; a year of remarkable destruction of the black scale by parasitic insects; a period of good work of beneficial insects both native and imported, and a time of the trying-out of methods of artificial control. The season has witnessed the multiplication of the greedy scale upon the shade and park trees and its prevalence in the citrus orchards. No uneasiness is felt over the attacks of this scale upon fruit trees, but it has become a serious menace to the health of many umbrella trees and palms. There has been a bad outbreak of the mealy bug in many of the greenhouses and nurseries of the city of Los Angeles. It has injured many valuable vines and is especially troublesome where miscellaneous plants have been grown for a considerable time. Orchards to the eastward of the San Gabriel River are entirely free from red scale, except in one small locality, and it has decreased in places where it has heretofore prevailed in other portions of the county. In all places where fumigation has been applied regularly this scale has not secured a hold. This insect and the purple scale are kept confined to the area that has been contaminated with the pests for the last fifteen years, there being only one tree infested outside of this territory, so far as the most careful inspection can determine. Black scale has hatched in a remarkably even way this season and is on the wane all over the county.

The crop of apples has been sadly injured by the codling-moth this season, and will not amount to a yield of fifty per cent of the normal crop of merchantable fruit. On the other hand, a rapid decrease is noticeable in the other great apple pest, the San José scale, and we may hope that this immunity may be permanent. There are many minor insect pests such as the elm scale, cutworms, an occasional bunch of white scale, the various species of plant lice, borers, etc., none of which have been of sufficient importance to require special mention. Fuller's rose beetle, the peach-twig borer, and the melon aphis have done a great deal of damage in certain localities. The Board has an effective system of inspecting all incoming and outgoing trees and plants, and note with satisfaction that not one new pest has secured a hold in the county during the year.

War against the black scale has assumed an entirely new aspect during the past year, with the practical assurance of the final control without resort to artificial means. For years fumigation and spraying have been necessary throughout the county to insure citrus fruit crops reasonably free from black smut, and to maintain a healthy condition of the trees. The expense of this treatment has been enormous. In one locality containing 1,230 acres of full-grown trees the growers paid for fumigation in the fall of 1903 the sum of $24,600, and this heavy tax upon the industry afforded only enough immunity from the scale to produce one or two crops commercially free from black smut. It is estimated that this locality has spent, upon an average, $15,000 per year for fumigation, ever since the trees came into full bearing, about eight years ago, or the aggregate of $120,000, in attempting to control this, the most destructive of our citrus fruit pests. We have no means of knowing the cost of fumigating or spraying the total area of orange and lemon groves, but it would be appalling if the whole cost could be determined for all the years in which these fruits have been produced in southern California.

But this inordinate expense bids fair to cease altogether through the introduction of the *Scutellista cyanea*, the chalcid fly that is so well known to our fruit-growers for the last twelve months as the most destructive foe of the black scale ever introduced. The work of the *Scutellista* in this county during the year has been so remarkable that it is deemed profitable to give some account of the increase and distribution of this great insect in this report. In the fall of 1902 a small colony of the fly was received by the Commission from the State Board of Horticulture through Alexander Craw. It was placed upon a young pepper tree in Pasadena on which an enormous lot of scale had located. For three or four months no indication of the fly could be discovered. In February, 1903, a few of the larvæ were found under the scale and an occasional exit hole made by the mature fly. The Commission soon found that the pepper tree afforded the best medium for breeding the *Scutellista*, and colonization followed upon a row of these trees from the flies of the original tree. In a few weeks the insects began to multiply more freely, and by midsummer they literally swarmed in the breeding jars filled from this source. By the first of August the work of distributing the flies was well under way, resulting in twelve months ending last August in the sending out of hundreds of thousands of mature flies to the communities of the county. By the fall of 1903 the demand from the farmers became so great that additional breeding facilities had to be provided, requiring the attention of one man practically all the time in gathering material, mailing and recording the distribution. So great was the increase from individual jars that one would sometimes produce one thousand flies in a day. The work is still being continued at the time of the writing of this report. The result of this systematic distribution is, that so far as the Commission can determine there is not an orchard, citrus or deciduous, in the county that has not been supplied with this most effective parasite.

The colonies sent out in the fall of 1903 seemed to find the greatest opportunities, getting a good start before the cold weather, and by early summer of this year convincing the most conservative that at last an effective parasite for the black scale had been secured. In one large district the Commission has just made a careful examination of the work of the *Scutellista*, resulting in the report that the scale has become so reduced that the growing orange crop will need nothing more than dry brushing, there being no black smut to require the washing of the fruit, even where the trees had received no treatment whatever. The proprietor of one of the largest citrus groves in the State estimates that the fly has saved him $3,000 this season, the trees needing no other treatment than that given by the parasite. The Commission has its own report upon this orchard, verifying the completeness of the work of the fly. In an olive orchard of 80 acres south of the city the destruction of the scale has been so complete that two clean crops of fruit have been harvested where heretofore the crops have grown too smutty for use. The owner has relied solely upon this insect for this happy result. Six large groves have lately been inspected by the Commission in conjunction with a committee of growers to determine whether fumigation will be necessary this season. The decision was that the fly had become so active upon the June and July hatch that no expense would have to be placed upon the owners this year to produce clean fruit. Such reports are obtainable from every part of the county, and the outlook justifies the expectation that the *Scutellista* will become a controlling factor wherever it is introduced.

In regard to the enemies of the *Scutellista*, the Commission has one important phenomenon to report. In December, 1903, a large number of dead and decrepit flies were found inclosed in the black scale of the breeding jars. Upon more careful examination the flies were found covered with minute, translucent globules, very much resembling pearls, when the globules were placed under a strong glass. The Commissioners at once began correspondence with authorities on entomology and plant diseases, but found no explanation as to what the appearance might be. Soon the mortality of the imprisoned flies ceased and the globules were not observed again until last June. During this month the breeding jars failed absolutely, none of the maturing flies or larvæ surviving. A closer examination proved these globules to be the abdomens of gravid mites, and numberless progeny were found breaking out of the depositories and attacking the helpless flies, honeycombing the larvæ, and destroying every vestige of life. Through the finding of an old work on entomology containing a drawing of this curious mite, the Board determined it to be *Pediculoides ventricosus*, a creature never before discovered in the State, so far as your Board is aware. When these mites were in full activity last summer, the breeding jars that had given out several hundred flies every morning became dormant, and orders for *Scutellista* accumulated so fast that the last one has just been filled. The mites did not confine their ravages to the material in the breeding cases. They were soon found in scores of orchards, in one ten-acre grove of orange trees killing millions of flies and is fast exterminating them in that orchard altogether. In twenty-two groves that had been colonized with *Scutellista* on boughs of pepper sent by mail from the originally infested trees at Pasadena, every grove was infested with the mite. In about thirty orchards in the same neighborhood colonized by sending the mature flies in boxes, no indication of the mite could be discovered. Since August the mites have all disappeared except in two or three places, and the ravages of this strange visitor seem to be over for this season. How far they will prove a handicap only time can prove, but our experience has shown that the creature can destroy myriads of *Scutellista* in a short time under favorable circumstances.

In the destruction of Fuller's rose beetle the Commission has made many experiments during the year. This insect is proving a most destructive pest in the strawberry fields, and in fact gives its attention to almost every form of vegetable life. In the strawberry fields its work reached the point where steps had to be taken to curtail its operations. In the latter part of April the grubs attack the plants by boring into the roots or stems one or two inches below the ground. Here the work is continued until the plant is killed. Upon the death and drying up of the plant the grub returns to the soil, being found in great numbers surrounding the plants and remaining near the surface where the soil is moist, by burrowing five or six inches deep where the soil is dry. The pupæ appear early in June and the mature beetles about ten days later. The remedy used was carbon bisulphide. Before applying it the ground was irrigated and allowed to dry off before the application. One third of an ounce of the carbon bisulphide was used as a dose, and the injections made as follows: One injection every linear three feet in the row, one every two feet, and one every eighteen inches. Twenty-four hours afterward an inspection of the treated rows was made and the following methods employed to determine results: The soil was removed from a width of twenty-four inches and to a depth of eight inches and carefully sifted. All the insects were removed and placed in a shallow box and allowed to remain in the sunlight for fifteen minutes before the count was made. The count resulted as follows:

Doses.	Grubs.			Pupæ.	
	Total.	Dead.	Alive.	Total.	Dead.
One third ounce to 3 feet	56	43	13	1	1
One third ounce to 2 feet	42	35	7	0	0
One third ounce to 18 inches	36	34	2	2	2

This is perhaps the first recorded instance of this insect's attacking the roots of berry plants. However, from the evidence gathered it seems that unrecognized it has for some time been working upon the roots of the strawberry plants in different parts of the country. Fortunately the natural spread of this insect will be slow, owing to its inability to fly, and every effort should be made to take advantage of this condition and to prevent its spread by other means.

In the control of red and purple scale the Commission has been hindered by the orchardists using distillate spray and other washes. During the incumbency of the members of the present Board scores of spraying outfits have been placed in the field for the application of distillate, in many communities entirely displacing the old and reliable remedy of cyanide fumigation. This change has caused the increase of the scale instead of its control, and there might be a new epidemic of these scales were it not for the fact that the ranchers are returning to the use of fumigation. The area infested with purple scale is limited to three communities in the county, one of which, however, is of considerable importance as a citrus-growing territory. In that locality the trees have been sprayed so persistently that their vitality is seriously impaired, and the trees would have been ruined had this method continued in use. Through all this contest between spraying and fumigation the Commission has held to the latter method as the only effective and safe means of combatting the red and purple scales. The tide has now turned in favor of the use of cyanide and the question as to the efficacy of each of these remedies finally settled.

Good work has been done the past season in the colonization of the convergent ladybird upon the infestation of the melon aphis and kindred pests. In one very large melon-growing district the reports show that these pests were completely exterminated by the introduction of three or four thousand of these ladybirds from a distant locality. This work will be continued by the Board another year. An extensive outbreak of the mealy bug has occurred in the citrus groves of another section. The remedies used were cyanide and bisulphide, the former being applied in both the liquid and gaseous forms. The use of cyanide in the liquid form was an experiment which the Board is not ready to indorse, though it is highly spoken of as a remedy for the subterranean form of the mealy bug. This insect is very active upon the ornamental plants of Los Angeles City. The attacks have been met in every case by thorough treatment.

A few of the apple orchards of the county were badly infested with *Pulvinaria innumerabilis* about a year ago, and we have to record the strange fact that this scale was attacked by the *Rhizobius ventralis* and completely wiped out. So numerous were these ladybirds in these orchards that the Board had no difficulty in gathering *Rhizobius* in unlimited quantities, many large colonies being sent to Illinois to work upon the same scale there. The bugs failed to become acclimated in the East and no favorable results were obtained. Whether the *Rhizobius* attacked this scale here on account of the scarcity of other food may be demonstrated the coming year. It may be one of the natural enemies of the maple scale.

In the control of the codling-moth in this county no new experiments have been made, and the growers are depending upon the old remedies for the reduction of this pest. The apple men would have tried the arsenites and other newly approved applications, but the material was difficult to get. They have ceased to regard the San José scale as a serious pest in this county, on account of parasitic enemies and other causes unknown to this Board. Experiments upon the extermination of this scale have been tried during the year with more than one remedy not in general use. Very positive results were obtained by the use of pure kerosene, 124 gallons of oil being used in this extensive test. But the danger of injury to the trees has again been demonstrated in the use of kerosene. In another test upon 300 large apple trees a four per cent mechanical mixture of distillate was tried, costing but 2½ cents per tree, but it proved entirely ineffective. Our experiments in this line covered six orchards containing from 200 to 1,000 trees each, resulting in the return to the old remedy of sulphur and lime. It is assuring, however, that we can begin to depend upon the natural enemies of the San José scale, and not have to spray continually to keep this pest in subjection.

The Commissioners have on file a special report upon the ravages of an insect that destroys the apple blossoms seriously in this section. The insect has been identified as *Archips rosaceana*. The report is a complete life history of this local pest, embracing an account of its work, its natural enemies, and the application of arsenite and other poisons in its elimination. The Commission has made many careful experiments in the destruction of the woolly aphis, and while this insect is not increasing, no effective means of ridding trees badly infested has been determined.

In closing this report the Commissioners wish to make more emphatic the fact that the work of beneficial insects has assumed great proportions in Los Angeles County. Parasites are very active upon the red and yellow scales, to some extent upon the purple scale, the mealy bug, plant lice, San José scale, cutworms, codling-moth, and upon almost every form of destructive insect life. Too much praise can not be given to the *Scutellista*. The *Lecaniums* other than the black are under control, and the outlook for a continuation of this good work is very hopeful indeed.

Respectfully submitted.

J. W. JEFFREY, Secretary.

MENDOCINO COUNTY.

UKIAH, CAL., September 28, 1904.

To the Honorable State Horticultural Commissioner:

SIR: I herewith submit my report for the First Horticultural District of Mendocino County.

We have 304 acres of Bartlett pear-trees in this district, which produced a full crop this year. We used arsenic sprays and paris green, and saved ninety-five per cent this year against forty-five per cent last year. I tried a little experiment here which convinced me that climatic conditions have a great deal to do with spraying, laying of eggs and hatching of the codling-moth. I find that June 1st is early enough for spraying here, and about three sprayings between the 1st of June and the 20th of July will save the crop.

We have 1,150 acres of prunes in this district. There was not more than a fourth of a crop this year, but the quality was good. We have the San José scale under control here, having used the lime, sulphur and salt remedy. We also have the brown apricot scale under control.

Our county has about 400 acres of wine grapes, all in good condition and bearing fine crops. We have also 400 acres of apples, 150 acres of peach trees, and 185 acres of olives. The latter bear well, but are a little late in ripening. Cherries do well along the foothills; about 50 acres are set out to this fruit. Figs are somewhat of an experiment, but do well, being prolific bearers and ripening early. French and English walnuts also grow here; we have 80 acres planted to these varieties. About 60 acres are planted to loganberries, blackberries, raspberries, dewberries, strawberries, and currants, all being of first-class quality. We have produced about 3,000 bales of hops from 500 acres this year.

Respectfully submitted.

J. R. BANKS, Commissioner.

MONTEREY COUNTY.

DUNBARTON, CAL., November 7, 1904.

To the Honorable State Horticultural Commissioner:

SIR: The apple crop in Monterey County this year was almost a failure. This is the main fruit crop in the county and was a serious disappointment to the orchardists, as apples are considered a sure crop. The trees were slow to bloom in the spring, and the abundant rains, coming just at blossoming time, apparently blighted the blossoms. The prospects were for a good one-third crop until the extreme hot weather of early September burned the fruit. A remarkable feature of the injury was that fruit well covered with foliage was injured as well as that which was exposed to the sun. The percentage of fruit left uninjured was very small. The amount of apples shipped abroad was light. Apricots were a good half crop and the quality good. Berries of all kinds did well and proved a profitable crop to the growers.

We still have the San José scale, greedy scale, and black apricot scale. As a remedy for the last named, through the kindness of Alexander Craw, formerly of San Francisco, and William Barry, of Alameda County, two colonies of the *Scutellista cyanea* were introduced into the Pajaro district and placed on apricots infested with the black scale. The introduction of the *Scutellista* as a remedy for this persistent scale will be determined better another season. For the San José and greedy scales we are using distillates, and find them effective. Lime, sulphur and salt spray is also effective; but owing to the great amount of labor in its preparation, and the unpleasantness in handling it, this spray does not find much favor. The codling-moth is with us as usual, but owing to the lightness of the apple crop not much attention was paid to it. So far nothing new has developed to check it beyond the experiments conducted by the Experiment Station of the State University last season.

Following the extreme heat, came some rain, as much as five and a half inches in Pajaro, which had the effect of starting a new growth on many of the trees. Many apricots, prunes, and apples blossomed.

Respectfully submitted.

D. W. ROHRBACK, Secretary.

ORANGE COUNTY.

ORANGE, CAL., October 29, 1904.

To the Honorable State Horticultural Commissioner:

SIR: I beg to submit herewith the report of the Orange County Horticultural Commissioners, on the condition of the fruit industry of the county, with respect to pests and diseases.

Black scale must be considered most troublesome, as it is most numerous. Spraying with the various distillates is the most generally adopted artificial means for its subjection, since it is cheaper than cyanide fumigation, although not as effective. But with the marvelous increase and distribution of *Scutellista cyanea*, and with its other enemies both predaceous and parasitic, we have faith that the black scale will soon be in complete subjection.

Red scale is slightly more numerous than last year, while its enemy, the golden chalcid fly, can always be found wherever the scale is present, so we may expect to see the balance easily maintained.

Purple scale, the only one which has no effective enemy in our county, has been found in limited numbers in a very few new places.

In the mite family, the six-spotted mite is destined to be a greater cause for worry than the commonly called "red spider," since seemingly small numbers cause the trees to drop their foliage badly.

Fuller's rose beetle is also quite troublesome in rebudding as well as in replanting.

As to diseases, scaly bark of the orange is increasing in the older orchards, though I think never appearing until trees are more than twelve years old. This, together with the foot-gum disease of the lemon, is a cause for some discouragement.

Respectfully submitted.

A. D. BISHOP, Secretary.

PLACER COUNTY.

AUBURN, CAL., December 16, 1904.

To the Honorable State Horticultural Commissioner:

SIR: I have the honor to forward this, the report of the County Horticultural Commissioners of Placer County, for the year 1904.

Most of the orchards in this county have been regularly inspected by the County Commissioners from time to time, and they report as follows: The fruit crop of all kinds was below the average. This has generally been attributed to continued rains during the months of February and March.

Our Commissioners have repeatedly inspected the orchards in their several districts, as well as all nursery stock coming into or going out of the county.

In some sections the "pear blight" has appeared, but by the constant vigilance of the Commissioners, and the hearty coöperation of the orchardists, we have kept it under control.

The peach moth, which at one time caused serious loss, has in a very great measure been checked by spraying with the lime, sulphur and salt mixture, and it has been clearly demonstrated that it is a waste of time and material to do this spraying during the winter, as the insects are then buried in the bark of the trees. Experience has taught us that the time to spray for this pest is when the trees are coming into full bloom.

The following table shows the horticultural conditions of Placer County during the years 1903 and 1904:

	Trees in Bearing.	Non-Bearing Trees.	Total.
Apples	19,400	6,770	26,170
Apricots	12,300	7,480	19,780
Cherries	15,900	9,040	24,940
Figs	5,100	3,840	8,940
Olives	33,410	20,900	54,310
Peaches	793,200	601,200	1,394,400
Prunes, French	6,400	3,000	9,400
Prunes or Plums, other varieties	104,200	182,300	286,500
Pears	108,300	42,900	151,200
Lemons	1,500	1,800	3,300
Oranges	26,400	23,400	49,800
Almonds	5,900	3,400	9,300
Walnuts	1,520	700	2,220

Grapes: Table, 1,540 acres; raisins, 380 acres; wine, 625 acres; total, 2,545 acres.

It may be of interest to state that there are 195 miles of main ditches for irrigation purposes in Placer County.

Respectfully submitted.

W. J. McCANN, Secretary.

RIVERSIDE COUNTY.

RIVERSIDE, CAL., October 1, 1904.

To the Honorable State Horticultural Commissioner:

SIR: The Horticultural Commission of Riverside County has the honor to submit herewith its report for the year 1904, as provided by law.

The horticultural industry of Riverside County has increased, in spite of the lightest rainfall ever known, and considerable litigation over "water rights," above as well as below ground.

New orchards of citrus and deciduous trees have been planted throughout the county, the greatest increase being in Riverside and Corona districts, where the taxable property has gained in value nearly $411,000 in Riverside and $96,000 in Corona.

The Banning, Elsinore, Coachilla, and Mecca districts show a gain of taxable property, which has been caused chiefly by the general development of the fruit and vegetable industry.

On account of the very light rains during the past season, the "dry" farming was almost a failure except in the Beaumont district, where fair crops of grain were raised. Plenty of seed has been carried over, however, from last year's crop of 500,000 sacks of grain, so that the prospects are that there will be a greater acreage seeded this fall and winter than ever.

The apricot and peach crops were small and the fruit inferior, on account of late frosts and lack of the usual spring rains, except at Banning, where they had a fairly good crop, and the horticulturists have demonstrated that they can control, and in some orchards have actually eradicated, the red spider of the almond (*Bryobia*) by the application of the adhesive "sulphur spray."

There was a large yield of pears, but the quality was not up to the usual high standard. This change has been brought about largely by the ravages of the codling-moth, which was assisted no doubt by the unusually long hot season for this section.

In the Corona district the horticulturists disagree in their methods of treating scale pests, as between spraying and fumigating; but the Commission is unprejudiced, and allows a choice of remedies, and spares no labor or pains to see that the spraying or fumigating is carefully and thoroughly done.

The Commission has distributed 734 colonies of *Scutellista cyanea* in the orchards infested with black scale, and reports a large percentage of scale destroyed by the parasite. The black scale finished hatching about September 1st, when the parasite disappeared and will not appear again in this section until about June 1, 1905. So that it seems safe to conclude that there is no danger of destroying the *Scutellista* by spraying or fumigation between October 1st and June 1st, the hibernating period in this section.

In the Riverside district the majority of orange-growers favor spraying with distillate emulsion, as results show that spraying with power machines by experienced workmen under the supervision of a Horticultural Commissioner has been very successful in eradicating a large amount of black and red scales. The Commission stands ready, however, to assist any who prefer to fumigate, as the county owns first-class fumigating outfits and has experienced men to operate them. The county never bought and does not own a spraying outfit, but the horticulturists did buy and are now operating over thirty power spraying machines, under the supervision and instructions of the Horticultural Commission, by request of the machine and orchard owners.

In spite of unsatisfactory market conditions for citrus fruits during the past season, the increase of about 1,000 cars over last year's product shows an increased confidence in the citrus fruit industry. With the completion of the Salt Lake railroad the fruit-growers hope for better facilities in marketing their fruit than they have had in the past. The shipments of citrus fruits for the season just closed were about 6,000 cars from Riverside, 975 cars from Corona, and 40 cars from Hemet.

Banning shipped 1,305,750 pounds of green fruit, 453,000 pounds of prunes and other dried fruit, 53,000 pounds of almonds, and 44,000 pounds of honey.

On account of the scarcity of deciduous fruits, the cannery at San Jacinto only had about half the pack of last year.

Coachilla, on the "desert," shipped 113 cars of melons, the land being irrigated by artesian wells owned by the settlers.

The "date farm" of 6½ acres, at Mecca, with 400 thrifty date trees, under the efficient management of Mr. B. Johnson, is looking well, and is constantly watered from a fine artesian well.

Some of the apple-growers have succeeded in producing fruit nearly free from codling-moth by spraying the trees several times with arsenical insecticides.

The Commission is maintaining strict quarantine regulations against trees and all kinds of nursery stock from outside the county, and has succeeded thus far in preventing the introduction of any new pests or diseases. In this work we have the hearty support of the Board of Supervisors, the press, and all the progressive horticulturists throughout the county, in which we are exceptionally favored.

Respectfully submitted.

H. K. SMITH, Secretary.

SACRAMENTO COUNTY.

SACRAMENTO, CAL., October 1, 1904.

To the Honorable Horticultural Commissioner:

SIR: The Horticultural Commissioners of Sacramento County submit herewith their report for the year 1904.

Scale.—We can report that in the orchard districts insect pests are being kept in check, codling-moth as usual being the most difficult to handle. In the city we find more or less of all citrus scales, most noticeable being the black and yellow scales. Since early in the spring we have been using the distillate wash with a power sprayer. Trees sprayed early show a marked improvement, sending out new growth.

Olive Knot has made its appearance in a light way in some of our olive orchards; where found the tree is destroyed root and branch. Fair Oaks and Orangevale being planted to a large acreage, the olive groves now coming into bearing bring Sacramento County forward as an olive-producing county.

Pear Blight has made its appearance so pronounced this spring as to clear all doubts there may have been last season. We note that it appeared in different parts of the State where never before known, which raises the question of climatic conditions. We find the blight most severe on the Sacramento River. We have kept an inspector in the orchards along the river during the past season, noting the conditions and enforcing the cutting-out of the affected parts. We might safely say at this time that the disease spreads over a larger part of the tree where the cutting was left to be done at the fall pruning. In some cases it made great inroads on the trees. Very few pear trees will be planted this season.

Phylloxera having been with us to some extent for many years has caused a very large acreage to be planted to resistant vines. As these vineyards are young, their merits as grape-producers have not been thoroughly tested.

Flea Beetle.—The work of the flea beetle is very noticeable in some of our vineyards, which has been attributed by some to sunburn. Mr. E. F. French of Florin was the first to note the difference, and he has been making a careful study of its habits for several years, but as yet can not offer any other remedy than a hand method of killing. The insect punctures the stem of the bunch, making weak circulation, and causing the berry to burn more easily.

Asparagus Rust has made its appearance in some of the old fields. Growers hope to keep it in check with the free use of the Bordeaux mixture.

Fruit Conditions.—As a fruit season this has been a very unsatisfactory one to the growers—a light fruit crop, excepting pears, which were a full crop, but returned poor prices for those that were shipped. All fruit sold to the canneries brought good prices. The early rains damaged the grape crop to a very large extent. Taking the season through it has been a very poor one for the grower.

Sacramento County has suffered heavily by the floods, which not only caused the loss of the use for one year of thousand of acres of land, but killed a large acreage of peach, plum, and cherry trees.

After a careful canvass we can report Sacramento County as having 300,000 bearing and 20,000 non-bearing pear trees.

Inspector L. C. Chisholm has had charge of inspecting the work of pear blight and olive knot. Inspector Jesse Aiken has charge of the city to inspect nursery stock and the spraying that we have caused to be done within the city.

Respectfully submitted.

GEO. H. CUTTER, Secretary.

SAN BERNARDINO COUNTY.

San Bernardino, December 24, 1904.

To the Honorable State Horticultural Commissioner:

Sir: I have the honor to report as follows for the year 1904:

We have in the past year found the black scale (*Lecanium oleæ*) about normal as to quantity and condition. Very little spraying and fumigation have been done for this pest during the past season, for the reason that inspection has shown plentiful evidence of the presence of *Scutellista cyanea*, the South African parasite. If the parasite holds its own during the coming year, the black scale is doomed in this county.

With the white scale (*Icerya purchasi*) it is the same old story. Where it shows up in the orchards the *Vedalia cardinalis* also appears in numbers sufficient to cleanse the trees.

With the yellow scale (*Aspidiotus citrinus*), we have an entirely different story to tell. The reputed parasite, *Aspidiotophagus citrinus*, has been repeatedly placed in infested orchards, but the scale has gone on increasing in numbers, extending its territory to an alarming extent. In one portion of our county, power spraying machines have been at work trying to hold the pest in check, but with very indifferent success. Until we are furnished with a successful parasite, the only method that will prove satisfactory is fumigation with hydrocyanic acid gas, and I wish to add here that even with this remedy, it must not be used in homeopathic doses. We could cite cases where contract fumigation has not seemed to affect this scale to any appreciable extent on account of light dosage.

With the red scale (*Aspidiotus aurantii*), the case is very similar to that of the yellow scale. Our method at present is to endeavor to inspect orchards affected with these scales as often as every two months (that being the length of time necessary to produce a new generation) and immediately follow with the tents after orchard is platted, and fumigate enough of the trees to include all trees marked as infested. In this way we expect eventually to stamp out these very serious pests.

In the matter of grapevines, we have in this county a very large acreage of healthy vineyards, and to protect this interest we have a county ordinance quarantining very strictly against the introduction of vines from points known to be infested with *phylloxera*, for the very good and sufficient reason that in the localities affected with this pest, they are not even able to stay the progress or spread of the pest, which in some sections is wiping out the wine and raisin industries. In this case an ounce of prevention is worth a pound of cure. Our ordinance is equally strict against the introduction of citrus stock or plants liable to bring in *Aleyrodes citri*, or white fly, and other serious pests that have not as yet found their way into our county.

In our apple districts some work has been done to reduce such pests as woolly aphis (*Schizoneura lanigera*), codling-moth (*Carpocapsa pomonella*), and *Bryobia pratensis*. In some localities apple trees from four to six years old have died back to a limited extent, caused by a parasitic fungus which girdles the tree under the bark just at the surface of the grouud. This, however, has not prevailed to such an extent as to cause any serious alarm. In the past season, a few hundred acres have been set to citrus trees, and several thousand acres of dry land have been set to wine grapes, which are in a thrifty condition.

A number of enterprises worthy of note are at present being pushed ahead in our county, among which may be mentioned the Arrowhead Reservoir Company, which is building extensive reservoirs in the mountains to the north of the city of San Bernardino. We may also add Kenwood Heights, which is a large body of land in the Cajon Pass, owned by Chicago parties, who have developed sufficient water for their tract, constructed buildings, and are setting out vines and trees which will make it one of the attractive beauty spots in the county.

Respectfully submitted.

S. A. PEASE, Secretary.

SAN DIEGO COUNTY.

SAN DIEGO, CAL., September 30, 1904.

To the Honorable State Horticultural Commissioner:

SIR: In complying with the law governing County Boards of Horticulture, I herewith submit my annual report.

The present condition of the Escondido citrus orchards is the same as in past years—vigorous and fruitful, with abundance of water for irrigation.

Our vineyards as a whole have produced good average crops during the past dry years, and have shown no signs of drought before this year. Vineyards located on shallow soils are not quite up to the average, but those located on deeper soils are producing nearly average crops of choice grapes. The mountain districts have produced good average crops of apples, cherries, pears, and plums.

The olive crop of this county this year is very light, probably not more than ten per cent of last year's crop. This I attribute to the effects of drought and the exhausted condition of the trees after last year's heavy crop.

At present the insect problem in our county seems to be nearer solution than ever before, as we have every reason to believe that in the *Scutellista cyanea* we have the true parasite of the black scale. From one small colony which I received over two years ago from Commissioner Craw, it has been fully demonstrated that this insect is superior to all other beneficial ones in exterminating the black scale. I have succeeded well in propagating the *Scutellista cyanea*, taking as many as twenty-four colonies in one day from my breeding jars. They have been mailed to all fruit-growing districts of the county where the black scale's presence was known.

The great battle fought by the fumigators and sprayers for years has quietly calmed down, and the work of eradicating the purple scale (*Mytilaspis citricola*) is at present better done by the little brown-necked ladybird (*Rhizobius toowombæ*) than by all other combined efforts. In fact, but very little fumigating and spraying will be done this fall in San Diego County.

With regard to the different species of mites in the orchards, I would say they are best controlled by dusting the trees with sulphur during the early summer months.

The codling-moth in the Julian apple district has been well controlled this year by giving three well-directed applications of paris green solution, commencing at the proper time.

A close watch has been kept of all steamships arriving at the port of San Diego and all fruits and plants have been inspected.

Seven consignments of apples and pears from northern dealers to San Diego commission houses, on inspection were found to contain codling-moth, and were condemned. At present all fruit arriving at the San Diego port from northern dealers is of excellent quality and practically free from pests.

Respectfully submitted.

F. AUSTIN, Secretary.

SANTA BARBARA COUNTY.

SANTA BARBARA, CAL., October 25, 1904.

To the Honorable State Horticultural Commissioner:

SIR: The fruit industry of our county is, in many respects, the same as it was one year ago. All crops are below the average in quantity, being from one half to three fourths of normal amount. The quality will not quite equal that of last year, owing to climatic conditions. Insect pests have been controlled by the beneficial parasites to a great extent, and by spraying with distillate. The apples and other deciduous fruits of Lompoc and adjoining valleys have done fairly well, and lso in some portions of the Santa Maria district, while other interests are superseding fruits in the latter.

The grape crops have been good, but in a few places the Anaheim disease has made its appearance and the owners have destroyed the diseased vines.

Citrus fruits have done well; the pests have been cared for by using the rhizobiids, the *Orci*, and by spraying and the introduction of the *Scutellista.* This has not shown the success we expected, but we hope to report favorably in the future.

Lemons have brought fair prices for shipment. Walnuts will furnish a large crop, but there will not be so large a percentage of *first-grade* nuts as in last year's crop — which was phenomenal; yet the higher prices this year will counterbalance to some extent the other deficiencies.

The walnut blight has shown some peculiarities; only a few orchards not known to be affected last year have been found diseased this year, while many orchards that were diseased last year are reported as free from blight this year. We are unable to give the reason for this, and opinions differ.

We beg leave to state here that the specimens of fruit sent from Santa Barbara County to the World's Fair at St. Louis attracted great attention and won widespread and favorable comment.

The late rains give promise of much planting of trees during the coming winter.

Respectfully submitted.

T. N. SNOW, Secretary.

SANTA CLARA COUNTY.

SAN JOSE, CAL., October 13, 1904.

To the Honorable State Horticultural Commissioner:

SIR: As Entomologist and Horticultural Commissioner for Santa Clara County, I respectfully submit this report for the year ending September 30, 1904.

My appointment was not made until August 10th, on which day Mr. Ehrhorn's resignation was accepted, but I have been able to cover the whole year's work, partly from records left by my predecessor, partly from other reports, and largely upon my own observations.

Through the courtesy of the Board of Supervisors much better accommodations are to be furnished. A small, well-lighted front room in the Hall of Records is being fitted up with desk, table, bookcases, breeding cages and other furnishings, so that the opportunity for work, especially for propagating beneficial insects, will be much better than during the past.

This year the people have experienced conditions much out of the ordinary. An unusually cool summer, with short periods of extreme heat followed by severe showers, has caused considerable apprehension among fruit-growers, though the damage actually done has been slight. The very deplorable condition of the prune market is generally known. The ravages of insects, especially thrips, have been severe.

Nursery stock shipped into the county during the past year has amounted to 146,023 fruit and nut trees of various kinds, 9,097 ornamentals, 93,190 grapevines, and 6,600 berry plants. There were 1,500 assorted fruit and ornamental trees received from Oregon, and 30,000 grapevines and 95,000 seedlings (mostly myrobolan, cherry, and pear), came from France.

The increase in orchards (computed from records submitted by the County Assessor, hence conservative) is approximately 2,000 acres. The French prune has been the tree commonly planted. A decrease in vineyards, largely of the wine-producing varieties of grapes, amounts to 450 acres.

The common insect pests are thrips, codling-moth and woolly aphis on apple, the grape phylloxera, black and brown scales on apricot and prune, the peach-root borer, the peach worm, the flat-headed apple-tree borer, cankerworm, and pear scale. Other injurious insects, tent caterpillars, cherry slug, squash bug, leaf and vine hoppers, and the diabrotica, have appeared in such numbers in places as to cause considerable trouble.

Wherever the two parasites, *Comys fusca* and *Scutellista cyanea*, have been carefully distributed, orchards appear quite clean from scale and their accompanying fungus, while in other places the scales are still doing their destructive work unchecked. None of the best fruit-packers care to receive spotted apricots either for canning or as a dried product; in the latter case, if scabbed, the price is depreciated two or three cents per pound.

People who have worked carefully and intelligently on the peach-root borer do not now consider it at all dangerous, while to the careless, negligent worker the injury done often becomes fatal to the infested tree within a year or two. Several efficient remedies, if applied at the proper time, have been used with great success. The first adult moths and by far the larger number fly early in May, and if the larvæ are carefully cut from the tree in April and a heavy wash applied the damage will be reduced to a minimum. By scraping away the old bark and thoroughly applying the wash, or, as many have done, using instead a heavy crude oil having an asphalt base, the tree is put in a very unnatural state to the moth, and not being a suitable place for depositing eggs, naturally it is passed by. If this care is repeated a second year no borers will longer infest the tree. In some orchards a plain whitewash has been used, applied intelligently, and the trees are almost absolutely free from borers. The crude oil has come largely into favor the present year, but many people are afraid to use it. Providing oil of the right grade and kind is used there seems to be no danger. If applied on a warm day the fumes of the oil penetrating into their burrows draw out many, if not all, of the larvæ, and immediately on coming in contact with the oil they are overcome. The lighter oils and those having a paraffine base usually injure the tree.

While the cankerworm has not been a severe pest the past year, it is here and must be watched, as at any time it may appear again in destructive numbers.

The flat-headed borer has done damage to seventy-five per cent of the trees in certain young apple orchards. These trees were planted with care, carefully cultivated, and as the owners thought properly protected from the sun. Paper was wrapped about them, but being tied loosely it afforded a good means of entrance and protection for the adult beetles. These young orchards are on the hills near to old forest trees, where the borers find an especially good breeding ground.

Thrips have been the most destructive pest in the valley during the present year, and their work the most exasperating. One could gather hundreds from a small blossom cluster at blossoming time; see them at work, but could not lift a hand to stay their injury. They enter the flower while the bud is still closed or just opening and feed on the petals and young fruits. If the fruit is not killed outright, injury is done to the pistil so that fertilization can not take place. If the fruit is fertilized, injury is done so that scarring occurs on the mature fruit. In some orchards blossoms blackened before they had a chance to open. Later the insects feed on the leaves, causing them to dry and curl up, looking much as though they had been touched by fire. It is highly probable that the insect has been doing damage for several years from the reports of growers, but we have attributed scarred fruits, browned leaves, and poor crops to other causes or other insects, especially the cankerworm. The writer thinks that with more careful investigation other injuries will be attributed to this same pest. The past two seasons with very mild winters have been especially favorable to the increase of thrips, and probably with a severe winter these may be so checked that nothing need be done. While widely scattered the infested area is well defined, but is spreading gradually to the south, the insect being carried by prevailing north winds. The infested area includes some of our best and most productive prune orchards. The insect has taken largely to hibernating under the old shells of the black and brown apricot scales, where they are well protected from the storms, and because of this fact winter spraying has proved useless. If these insects appear again next year a spray will be used a week or two before the blossoms open.

Respectfully submitted.

DUDLEY MOULTON, Entomologist.

SANTA CRUZ COUNTY.

CORRALITOS, CAL., November 5, 1904.

To the Honorable State Horticultural Commissioner:

SIR: The Board of Horticultural Commissioners of Santa Cruz County herewith submits its report for the past year, showing the condition of the fruit interests of this county as they appear at the present time.

The past season has been rather a trying one to the fruit-grower of Santa Cruz County, and it was the exception instead of the rule where a good crop of fruit was harvested. Especially is this true of the apple crop, which is the principal industry of the southern end of the county. This shortage was partly brought about by a cold rain just at the critical time when the apple trees were in bloom, preventing the proper pollination, although some orchards that came under our observation put forth but a small fraction of the amount of bloom usually seen on those same trees. Then as a climax to an off year we were visited by a hot wave of three days' duration, which burned large quantities of apples as they hung on the trees just ready to gather in September.

Owing to the very limited amount of fruit in sight, few of the apple-growers had courage to make the usual fight against the codling-moth, although some kept up the good work. Quite a number in the hill district in the central portion of the county used the dust method of applying poison to the trees during the summer, and nearly all, so far as heard from, report excellent results and seem quite enthusiastic over that process, as they consider it more effective, cheaper, and easier to apply than in the liquid form. The University professors are still carrying on the codling-moth investigation in this county, with the view of determining on some remedy which has good killing powers and yet will not injure the trees. Most remedies which have been used successfully elsewhere control the worms here, but seriously injure the foliage in our damp coast climate. When it is determined how to make an insecticide which will not break down or disintegrate under our trying coast fogs the problem will be solved. In the meantime we are hoping for the parasite of the codling-moth.

Aside from the codling-moth, insect pests have done no great amount of damage to our fruit interests the past year.

While winter spraying in the northern end of the county was not entirely satisfactory on account of weather conditions, where the spraying was done after the rains, with lime, sulphur and salt, the San José scale is hard to find.

Phylloxera is quite prevalent in the vineyards in some sections, and the grape crop was also shortened by the effects of hot weather and early rains.

About the only real happy men were the apricot-growers near Corralitos and Watsonville, where the crop was fair and the prices good.

Respectfully submitted.

F. W. HITCHINGS, Secretary.

SHASTA COUNTY.

ANDERSON, CAL., October 31, 1904.

To the Honorable State Horticultural Commissioner:

SIR: The orchards of the county have yielded in general about one half a crop. Apples, pears, peaches, plums, prunes, cherries, and all kinds of berries are grown. There is some San José scale in different parts of this county, but this is pretty thoroughly kept under control with the lime, sulphur, and salt remedy. The codling-moth is very bad in all sections, and does great damage to the apple and pear crops. During the past two seasons it has been worse than usual. Some are using arsenical sprays to reduce the pest, but nothing in a general way is being done. The peach moth or worm is very bad in the peach sections, and causes much damage to young orchards by retarding the growth, and also to the fruit by causing inferior fruit. Observations this fall show that large numbers of the worms have gone into their winter quarters and will be very destructive during the coming season. Where the lime, sulphur, and salt wash has been used in accordance with the instructions given by the Board of Horticulture, the results are highly gratifying and reduce the loss to a minimum. Our Board strongly recommends this wash to all growers; but so many are careless and indifferent that it seems impossible to get the best results. The pear slug does considerable damage, but is easily kept in check. This season we noticed a great deal of leaf blight on pears, particularly on young trees, also a few cases of the genuine fire blight of the pear. We are watching these very closely and will endeavor to prevent any spread of the same. The Bordeaux mixture is used by a good many of the orchardists with good results, many combining paris green with this in cases of codling-moth, and for the saw-flies. Some few cases of blister mite on the pear have been noticed. Some aphis on the apple (green aphis) and white rose scale (*Diaspis rosæ*) on blackberry have been discovered, but both are controlled by the kerosene emulsion. The thrip, or vine hopper, was quite destructive on the grape in some sections this season. There has not been much planting of young trees for the past three or four years.

Respectfully submitted.

GEO. A. LAMIMAN, Secretary.

STANISLAUS COUNTY.

MODESTO, CAL., October 24, 1904.

To the Honorable State Horticultural Commissioner:

SIR: I beg to submit the following report: I have inspected all trees and vines coming into my district and have disinfected all that I suspected of being infested with any disease or injurious insects. I had forbidden the shipment of any pear trees into our county from any district infested with pear blight, thinking that our county was free from the blight, but later I discovered several orchards slightly affected with the blight. The owners of these infested orchards were immediately notified to cut out diseased branches and burn them.

With each year I find a greater interest manifested on the part of the fruit-growers to learn of the different fruit diseases and injurious insects, and their treatment. The letters and personal inquiries I receive are more numerous each year, and I give out hundreds of formulas for the treatment of diseases and injurious insects, where formerly I gave but few.

Our success in stamping out the codling-moth is not very satisfactory, but I think the apple-growers do better work each year, as they are beginning to realize the benefit of clean fruit. As for scale, it is decreasing very rapidly; in fact, there is very little of it in my district, which fact should make us more careful and persistent in keeping infested stock out of our county, as Stanislaus County is destined to be one of the foremost fruit-growing sections of the State. There have been over 1,000,000 trees, vines, and cuttings received at Modesto, Ceres, and Turlock during the past two seasons, the greater part of which are growing and doing well.

Peaches, apricots, almonds, walnuts, pears, smooth-leaf plums, olives, figs, grapes, and apples (on roots resistant to woolly aphis) do well here, make good growth and are prolific bearers.

Respectfully submitted.

A. L. RUTHERFORD,
Horticultural Commissioner.

TEHAMA COUNTY.

RED BLUFF, CAL., November 3, 1904.

To the Honorable State Horticultural Commissioner:

SIR: The Board of Horticultural Commissioners of Tehama County beg leave to submit the following report for the year 1904.

Tehama County is gradually coming to the front as a fruit producer. We have produced about 2,000,000 pounds of dried prunes, besides about 1,000,000 pounds lost by early rains; about 1,000,000 pounds of dried peaches; about 1,000,000 pounds of green peaches, apricots, and plums; also 350,000 pounds of dried pears, 700,000 pounds of green pears, 150,000 pounds of pitted plums, 90,000 pounds of dried apricots, 600,000 pounds of green apples, and about 240,000 pounds of olives.

Our oranges and lemons are just beginning to bear. About one carload will be shipped. Trees are thrifty and indicate a fine prospect for the future.

The deciduous fruit has been well handled by our packers—proof of which is shown by Messrs. Stice and Gardner, packers of Red Bluff, having received a gold medal for dried fruit at the St. Louis Fair.

The condition of the orchards throughout the county is generally good—some few exceptions where owners neglected to spray, or spraying was done in a careless manner.

The pear blight, which has just made its appearance in the county, has been held in check by cutting out the affected twigs and burning them.

We are bothered so little with scale that it is hardly worth mentioning. Our most troublesome pests are the codling-moth on the pear and apple, and peach worm on the peach and apricot. These we have combated by using paris green for the codling-moth, and salt, sulphur, and lime for the peach worm.

The planting of fruit trees this season will no doubt be heavier than usual.

The fruit industry in Tehama County has every indication of a bright future.

Respectfully submitted.

A. W. SAMSON, Secretary.

TULARE COUNTY.

Visalia, Cal., September 30, 1904.

To the Honorable State Horticultural Commissioner:

Sir: The horticultural interests of this county, despite adverse conditions, have steadily increased. The orange and lemon orchards are in first-class condition, and last season's shipments were of fine quality and brought fair prices. The orchards are nearly free from scale, the result of close inspection and distributing colonies of *Vedalia cardinalis*, which has kept the scale from spreading. Special care is taken in inspecting all orange nursery stock shipped into this county. Several thousand new orange trees were planted last winter and all young trees have made a fine growth this summer. It is expected by all citrus-growers that the shipments this fall and winter will be the largest ever sent out from this section.

The peach crop was large and brought higher prices than last year, both fresh and dried. Many orchardists are planting clings, owing to the demand from the canneries. Last year 11,000 Philipp Clings were sold by nurserymen for planting in Tulare County, and the demand is large for this variety to plant this winter, canners offering long contracts at good prices.

The apricot crop was very light and the fruit seemed to have very little sugar—dried away very much more than other years.

The prune crop has turned out the poorest in quality and price that was ever grown here. Many trees died, owing to lack of care, overloading, lack of moisture, black knot, root rot, etc. The prune grown in Tulare County can be made to equal any, but more care must be given to cultivation, the care of the trees, and the handling of the fruit.

There was a very large planting of seedless varieties and wine grapes last winter. Owing to the low prices, the planting will be light this winter. The crop was the largest ever grown in this county and the quality good. Several large vineyards lost heavily by the rains, but still large quantities have been sold to the wineries. We are using great care in inspecting, hoping to keep out the phylloxera. This county has a special ordinance against all rooted vines. It is our only hope, as we are so near the dread disease.

We find the yellow scale in different parts of the county, but so far none in the new citrus orchards.

The Commissioners of this county are especially proud of the cleanliness of our orchards and vineyards, and believe this to be the result of the careful distribution of the colonies of *Vedalia cardinalis* and *Comys fusca.*

Respectfully submitted.

C. S. RILEY, Secretary.

VENTURA COUNTY.

VENTURA, CAL., October 20, 1904.

To the Honorable State Horticultural Commissioner:

SIR: The Board of Horticultural Commissioners of Ventura County have the honor to submit herewith their annual report for the year 1904.

On account of the light rainfall last winter fruit crops on unirrigated land have been short. The prune crop was almost a total failure. The apricot crop was below the average in quantity, but the quality of the fruit was good. The citrus fruit crops have been spotted; some orchards have borne heavy crops, while others have not paid expenses.

The walnut industry is taking the lead in the orchard business in this county. The crop and prices are both good, and walnut men are happy. The walnut blight has done very little damage in the county and good walnut orchards are held at from $500 to $600 per acre.

The olive crop was heavy last winter and the olive mills made a large quantity of oil, but the crop now on the trees is very light and the oil on hand is being held to supply the trade next year.

As previously reported, the black scale is still the worst pest in this county and the principal work of the Board this season has been the breeding of *Scutellista cyanea* and distributing colonies over the county. These parasites have increased and spread with amazing rapidity. In some orchards nearly all of the old scales have had parasites in them, and the *Scutellista* are now commencing to work on the oldest of the young scale. The Board is pleased to report that the *Scutellista* are also at work on the hemispherical scale and apparently thrive on it as well as they do on the black scale. No mites or other parasites have been found preying on the *Scutellista* in this county, and this Board has perfect confidence that this parasite will make the black scale as harmless as the *Vedalia cardinalis* has made the cottony cushion scale.

The local inspectors have just finished inspecting the citrus orchards, and no red scale has been found in the county; but some purple scale was found in Santa Paula Cañon, where it was thought to have been entirely eradicated. Red and purple scales have been introduced into the county several times, but the inspectors have always found it, and the Board has destroyed it with fire, with the owners' consent, before it had spread to adjoining trees. In this one case, however, the inspectors overlooked the purple scale until it had spread through a two-acre orange orchard owned by H. Crumrine. This orchard was fumigated and at first it was thought that all of the scale had been killed, but later live purple scale were found in a larger number of trees. Mr. Crumrine was then persuaded to grub up and burn the two acres of seedling orange trees, and it was supposed that all were killed this time, but on the next inspection the Board was horrified to find the scale in an adjoining orchard of valuable lemon trees just in their prime.

This orchard was fumigated, and for six months no live scale could be found, but the inspector has just found a small amount of live scale in this and the two adjoining orchards. Another fumigation has been ordered, but it is feared that our old remedy, fire, will have to be used, if the last one is to be gotten rid of.

We still have plenty of codling-moth in the county, and orchardists are anxious to get some of the new parasites which Mr. Compere is reported to have found.

Respectfully submitted.

J. F. McINTYRE, Secretary.

YUBA COUNTY.

MARYSVILLE, CAL., November 1, 1904.

To the Honorable State Horticultural Commissioner:

SIR: Since the last report made to you the Commission has, at a stated meeting, divided the county into three districts, viz., Camptonville district, comprising the northern end of the county; Wheatland district, comprising the eastern and southern portions, and Marysville district, comprising the middle part of the county. Each Commissioner has been appointed to look after the horticultural interests of the district in which he resides, and occasional meetings are held to discuss matters in connection with insect pests and the general condition of the fruit industry.

In Yuba County the business of fruit-growing is progressing favorably and there are no serious outbreaks of insect pests or tree diseases to report. There are isolated cases of pear blight and San José scale, but they are being carefully looked after, as well as the yellow scale on orange trees in the Marysville district. Some years ago the chalcid flies—parasites of the yellow scale—were introduced into the Marysville district, and the scale is now well in check. Colonies of the chalcid flies are now being supplied to the State Quarantine Officer.

Respectfully submitted.

G. W. HARNEY, Secretary.

TRANSACTIONS

OF THE

Thirtieth State Fruit-Growers' Convention,

HELD AT

SAN JOSE, DECEMBER 6-9, 1904.

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PROCEEDINGS

OF THE

Thirtieth Annual Convention of the California State Fruit-Growers.

San José, Cal., December 6, 1904.

Pursuant to a call, the Convention met in the Unitarian Church, San José, Cal., at 9:30 A. M.

President **Ellwood Cooper**, State Commissioner of Horticulture, called the Convention to order.

Rev. Anthony Mills of San José opened the proceedings with prayer.

ADDRESS OF WELCOME.

Hon. George D. Worswick, Mayor of San José, delivered an address of welcome, as follows:

Mr. President, Ladies and Gentlemen, Members of the State Fruit-Growers' Association of California: It is with sincere pleasure I welcome you to our city. We have had many prominent bodies of business men of importance among us for a few days, and these, so far as I know, have gone away with warm feelings in their hearts not only for the beauty but for the hospitality of the Garden City. I trust that the impressions that may come to you, gentlemen, may also be of such a character that you, too, will become the friends of our little city, which lies so deep in the affections of all of our people.

As you are aware, we are all in this county very deeply interested in fruit, and if as a result of your deliberations some solution of the greatest of California's problems, the profitable production and shipment of the fruitage of our orchards, is found, your Convention not only will have accomplished its purpose, but will have made us all your lasting debtors.

Give us some practical plan by which our orchardists may be enabled to produce and market their prunes with a margin of profit to themselves, and our beautiful little valley, from the glades of Gilroy to classic Palo Alto, will remember you with gratitude so long as the pure, white blossoms come and go, and so long as the sun warms us with his bright rays of hope and cheer. And if you succeed in solving the same deep problem for the rich Sacramento valley, for the picturesque vale of San Joaquin, and for the golden groves of the south, the whole State will rejoice and call you blessed.

Ladies and gentlemen, I am not here to make an extended address, nor is it my purpose to enter into a discussion of any of the grave problems which confront you to-day. I am here simply to welcome you, and this I do with all the enthusiasm of which I am capable. Again, gentlemen of the Convention, I bid you welcome, thrice welcome.

H. P. STABLER and W. P. LYON were nominated as Vice-Presidents of the Convention.

JOHN ISAAC was appointed Secretary of the Convention.

ADDRESS OF STATE COMMISSIONER OF HORTICULTURE, ELLWOOD COOPER.

This is the thirtieth State Fruit-Growers' Convention, and the third held under the auspices of the State Horticultural Commission. We have met here to discuss the fruit problem, and to better organize the fruit-growers, in order that we may realize a fair compensation for our expenditures and labors. Many no doubt look forward to this meeting with a hope that something may be evolved that will eliminate the want of harmony among several branches of the business, and unite the different or antagonistic feelings or opinions that now keep us from uniting to protect our labors.

One of the most important subjects which will come up before this Convention for consideration is that of finding a market for our products. I need not call your attention to the present demoralized condition of the prune, raisin and orange growers, and the dried fruit market generally, for you are already well aware of the fact; but the remedy is in our own hands. If we can organize, combine ourselves together and work harmoniously, we can control our own markets and secure fair profits for our products. This is a matter which will come up before the Convention for its consideration, and it is to be hoped that out of our deliberations some successful method of coöperative marketing for our fruit products may be decided on. There is no reason why so intelligent a body of men as the fruit-growers of California (and there is no doubt that, as a whole, they combine in their ranks the greatest intelligence of any men in the State) should not be able to work together in their own interests. We have organizations among laboring men of all classes, men far below the scale of intelligence of our fruit-growers, and they are working together for their own personal interests, acting as one man, and yet with all our efforts we have not been able to secure a permanent organization of the fruit-growers of the State. We are now offered the alternative of combination or ruin. With prunes at 1¼ cents, raisins at 2 cents, and other fruits at similar ruinous prices, there is nothing left for the fruit-grower but a choice between organization and starvation.

In this address, I will follow the plan that has generally been adopted, by treating the various subjects under different heads and thereby prevent confusion.

Panama Canal.—Work on this gigantic enterprise will soon be in active operation, and it is to be hoped will be completed before many more years go by.

New York Obelisk.—Nothing has been ascertained regarding the preservation of this ancient relic of civilization. It is necessary, however, that we keep the subject active. If the Central Park Commissioners fail to protect it from disintegration, on account of the severe climate, their negligence in its preservation should be held up to the lasting disgrace of our American people. Their reply to my request to have it moved to California was that they would build a house around it to preserve it. It has not been done, and it is our duty to keep informed concerning it.

Consular Reports.—I am pleased to state that during the present season we have been in receipt of a number of interesting consular reports, forwarded by our consuls in the different fruit-growing sections of the world, and relating to such fruits as are produced in California. I have improved the service and these reports are being forwarded to the various fruit interests which may be entitled to receive them. They are distributed from the Sacramento office, and any fruit-grower not now receiving them can get them by forwarding his name to the Commissioner at Sacramento.

Russian Thistle.—Reports have been received from different parts of the State during the past summer, to the effect that the Russian thistle has obtained a foothold in some of our counties. This has been reported especially from Merced and San Joaquin counties, where it seems to have a very strong hold in some of the alfalfa fields. This pest, so far as I have been able to learn, has been introduced in alfalfa seed purchased in Utah. It is one of the worst of known weeds, and if once established thoroughly in our State, it will cause our farmers and fruit-growers to lose hundreds of thousands of dollars annually, in the destruction of their crops and lands. While it is still new to our State, every effort should be made to extirpate it, and prevent it from becoming permanently established in this State.

Exhibit at St. Louis.—Acting on the request of the World's Fair Commissioners, I caused to be prepared and forwarded an exhibit of our beneficial and injurious insects, illustrating our California method of fighting insect pests with their natural enemies. This exhibit, although small, was handsomely prepared, and formed an attractive feature of the horticultural building in St. Louis. It has caused much comment and many communications have been received regarding it. It was purely an educational exhibit, and served to show what California is doing in this direction. The same exhibit, perhaps extended in size, will be forwarded to the Lewis and Clark Exposition, which is to open at Portland, Oregon, during the coming summer.

Nursery Stock.—As a great deal of nursery stock has been finding its way into this State from Oregon, and many complaints have reached me of peach stock coming from Eastern points through that channel, and there being danger of such stock reaching us from districts infested with peach yellows, peach rosette, and other diseases which we do not have in our State, I caused an investigation to be made, and sent an agent to ascertain to what extent Eastern stock found its way into Oregon. His report shows that the greater part of the peach stock received in this State from Oregon is of Eastern origin, but, so far as could be ascertained, it was procured from healthy sections, and while there is some danger to be apprehended from this source, that danger is not very extensive. However, every effort will be made, with the aid of the various County Horticultural Commissioners, to prevent Eastern stock from reaching us without some guarantee that it is produced in a clean section. The leading nurserymen of Oregon express themselves as willing to do all they can in this direction, and to work with us in keeping out infested stock.

Forest Tree Pest.—Another pest which is close to our borders, but has not yet obtained a foothold in our State, is the elm scale (*Gossyparia ulmi*), which is very prevalent in Salt Lake, and has also reached as far west as Nevada. This scale was introduced into the East some ten years ago from Europe, and has gradually been working its way west. Its attacks so far have been confined to elm, alder, and kindred trees. The elm is a favorite shade tree in very many of our towns, and it would be a very serious matter if this pest should obtain a foothold here. Every effort will be made to prevent its entrance, and in this we shall rely largely upon the efforts of our County Horticultural Commissioners.

Entomological Work.—I regret to state that, owing to the lack of proper compensation, we have lost two of our best entomologists and the men to whom California horticulture is very largely indebted. California is the pioneer in the work of fighting bugs with bugs. We have met with brilliant success in this line of work, and directed the attention of other nations of the world, and they have been keen to follow our example and take from us the men who have achieved our success. It is desirable that we should continue in this work and widen its scope. Arrangements should be made to keep at least two men constantly in the field searching for beneficial insects in different parts of the world. California is almost cosmopolitan in its products. We have the fruits both of the North and of the South, and with them we have the pests of the tropics and the temperate zone, and for this reason, we should search in various fields for our beneficial insects. To this end, we require more help, and the means to give better compensation to able men than has heretofore been accorded to the Commission.

I regret to state that we have recently lost one of our best men, and one of the most capable entomologists and most faithful officers that California ever had. Mr. Alexander Craw has been weaned from us by offers from the Hawaiian Government, and the inducements offered were so vastly superior to anything California will allow, that he felt compelled to give up his connection with our Commission, and to accept the liberal offers made him by the Islands. In the departure of Mr. Craw, the fruit-growers of California have sustained an irreparable loss, and the Hawaiian Islands have been the gainer. However, we have not altogether lost him, for in the performance of his duties in our island territory, he will ever bear in mind his California home, and, working harmoniously with our Commission, will continue to help our fruit-growers to the extent of his ability.

The subjects of Irrigation, Forestry, and Rainfall, I pass over at this meeting, referring to the address at the last Convention held at Fresno.

Food Adulteration.—The State Legislature will meet in January next. It is of the utmost importance that our pure food laws should be amended and the power delegated to some organized body, or to one created, to prosecute violations. Other States have taken up this question and are prosecuting offenders. In the formation of a new true label law, we should profit by the experience of other States. In the Philadelphia Public Ledger of August 17, of this year, referring to that subject, I find the following: "There are now over one thousand cases pending in the courts of Philadelphia, a good many over one year old." The people of California desire no such delay or uncertainty. I have also noticed in the public journals, fines of $50 being imposed for conviction. Such penalties will not prevent false labeling, and I doubt if they will improve very much the present deception practiced in our foods. What we want is a law similar to the German law. I quote further from the journal mentioned above:

> Shortly after the formation of the German Empire, Parliament established a Department of Hygiene, and appointed a commission to draft a pure food law. The chairman of that committee was the late Rudolph Virchow, with scientists, doctors, lawyers, manufacturers and others having experience in that line. They drafted a pure food law which is as nearly perfect as laws can be, passed it in Parliament, and secured its

approval by the Emperor. The good results in passing these laws can best be demonstrated by the fact that while they had a great many prosecutions and convictions in the first years, very few cases of importance were brought into court in late years, owing to the strict supervision and heavy punishment meted out to the offender. When heavy fines, and imprisonment of from two to five years for repeated offenses are given to the violator, he will not take the risk.

In a Philadelphia paper of September 28, 1904, I saw a statement that four cases of serious adulteration were pending against one of the most fashionable and prominent stores in that city. Chemists analyzed more than fifty samples of ice-cream, and found several adulterated with formaldehyde, while others showed mixtures of aniline dyes, gelatin, corn starch, and other foreign substances. Some of the highest priced ice-cream manufacturers were found in the list.

In the San Francisco Chronicle of October 10, a report from New York stated that twenty-five persons had died from drinking bad whisky, supposed to have been made from wood alcohol, which is the cheapest form of alcohol, is kept by all druggists, no doubt enters into many prescriptions, and is largely used in many of the patent medicines.

From the Los Angeles Times of October 13, I find that a statement was made that a consignment in bond, labeled "cherry color," was found to be nothing less than coal-tar dye, though declared to consist purely of vegetable matter, made up to color fruits. This is known to be a poisonous substance.

I recommend that a pure food law, or rather a true label law, be passed, after the pattern of the German law. For the first offense, a fine of $50 and imprisonment for six months, and for each subsequent offense an increased penalty. The national law imprisons counterfeiters of money. Counterfeiters of food products are a thousand times worse.

Insect Pests.—By and with the advice of the Governor, an arrangement was made with the West Australian Government by which we have an interest in the services of George Compere in his search for parasites. In this arrangement or agreement, his movements are directed by the Horticultural Commission of California. It was, however, stipulated that Mr. Compere should first proceed to Brazil to obtain the parasite of the West Australian fruit-fly. This required several months for the search after the parasite, and for collecting and carrying the same to the Australian Government. I am happy to report that his voyage was a great success, and that the ravages of the West Australian fruit-fly will soon end, and be practically harmless in that country.

George Compere was then ordered to Europe to investigate the codling-moth. It has been known for many years that this, our most troublesome pest, was not considered dangerous to the apple and pear industries in England, Germany, Spain, and France, hence the natural conclusion that there was an enemy keeping it in check. The discovery of parasites was not so difficult as many would suppose, especially to one of the ablest and most competent experts in this line of work known at the present time. Two parasites of the codling-moth have been sent over and are now being propagated in our office, No. 11 Ferry Building, San Francisco, to be sent to apple and pear growers throughout the State. We have also received a valuable ladybird, that keeps the red scale in complete subjection on citrus trees in parts of the Mediterranean coast. With reference to the codling-moth parasite, I beg to refer you to my opening address in the Fourth Annual Report, 1893–94, "Importation of Parasites," page 242. It is incomprehensible, in the face of known facts and constant urgings, how this search could have been delayed until this late day. If these parasites prevent any serious destruction to the apple and pear industries in the countries mentioned, why should they not prove equally valuable in California, or any other part of the United States, and save the loss of millions of dollars annually?

It is the duty of fruit-growers to see that the Horticultural Commissioner is amply supplied with funds to carry on parasitic work. The pear blight is increasing. The walnut blight is also alarming. It is my intention to have an expert investigate these diseases and find an inexpensive remedy. These are two facts to which I would draw the attention of this Convention.

I saw by the press reports during the peach season that canners were paying as high as $60 to $65 per ton for good canning peaches. Recently I noticed the following item in the press:

> It is the report that the raisin-packers have entered into a combine and bonded themselves to hold down the price to be paid the grower and prevent bidding against each other. The grower will not be offered more than 2 cents for his new goods.

The difference between the price paid for peaches and the price offered for raisins lies in the fact that we had a very short crop of peaches, and the supply was hardly equal to the demand, and to the fact that with the raisin-growers utterly demoralized and wholly at the mercy of the packers, the price of 2 cents was the only offer.

At the last Convention, a motion was made that the chairman appoint a committee of fifteen members, whose duty it would be to devise a plan or plans, and to put those plans into effect, to promote coöperation among the prune-growers, the raisin-growers, and the growers of all other classes of cured fruits, and to report to this Convention. The committee was selected from the different fruit sections of this State, and no doubt will make a report at this Convention. It is not my purpose to take up and discuss this subject at the present time. I, however, beg to call your attention to the investigation before the Interstate Commerce Commission at Chicago, recently, and to the statement made by Mr. Armour, that he had paid to Mr. Watson, manager for Porter Bros., over $2,000,000 in rebates in eleven years, and to the fact that the Santa Fé representative stated that his company was compelled to make rebates to compete with the Armour car line. The managers of the private car lines refused to answer questions, claiming that they were not common carriers. None of the rebates were ever distributed to the growers of the fruit shipped. The statement was made that the cost of icing a car was $10.32.

In any combination that we may enter, we will have to be careful not to do so in the form of a trust. Every political party is now denouncing trusts as a formidable obstacle in the way of progressive development. It is very probable, therefore, that congressional action on this subject will be taken. We want to steer clear of all complications that might occur. It is pertinent to discuss trusts, because they are a menace to our fruit distribution. Regarding this, I refer you to a speech made by Judge Gaynor, of the Supreme Court of New York, before the American Social Science Association, at a convention held in Boston, published in the Boston Evening Transcript, Thursday, May 12, 1904. Judge Gaynor takes for his text a saying of Cromwell: "If there be any one that makes many poor to make a few rich, that suits not the commonwealth." He treated the subject of laws for protecting mercantile transactions from Cromwell's time to the present. Professor Clark, of Columbia University, says that according to the use of the term "trusts," in popular thought and speech, it is "any corporation that is big enough to be menacing." To still quote: "Can you conceive of a greater wrong than the public highways of a country being used by individuals to destroy and drive out their competitors in business. They have their own cars, and have them hauled at rates that make competition against them impossible."

The first commercial trust was the Standard Oil Trust, formed in 1882. The Sugar Trust was formed in 1887. Both of these trusts were adjudged to be illegal by the courts. In the New York Court of Appeals it was decided in brief that while individuals could enter into co-partnership, corporations could not. The Supreme Court of Ohio also decided such combinations were illegal. What the courts did to destroy, the Legislatures undid by enabling acts passed in their favor. The feelings of the people in both States were unanimous against the trusts. Yet in the face of this the Legislatures made it possible for their continuance. This continuance was supposed to have been made possible by corrupting the Legislature.

Another great danger is false capitalization. The combination between the Northern Pacific and the Great Northern railroads has been declared illegal by the Supreme Court of the United States.

The Steel Trust issued in bonds and stocks over $1,400,000,000. The trust paid out in 1903 in interest and dividends over $58,000,000. Such an amount would have great power for corruption.

I only mention these things incidentally as they have a bearing on the private car line. I saw it published in the report of the investigation before the Interstate Commerce Commission at Chicago, that the Commission declared that the private car line had robbed the fruit-growers last year of over $2,000,000. If the fruit-growers can coöperate in the distribution of their fruits, the difficulties that might occur in a private car line can be obviated. The question of our success remains with ourselves. The difference between coöperation and a trust combination is ably discussed in an essay by A. H. Naftzger, in our Seventh Biennial Report, 1899–1900, pages 127–133.

Upon motion, Vice-President Lyons appointed the following committee to report on the President's address: Professor Fowler, Mr. Woolsey, and Professor Worthen.

REPORT OF THE SECRETARY.

Mr. Chairman, Members of the Convention: It is my privilege to report to you as Secretary of the Twenty-ninth Fruit-Growers' Convention, as follows:

A resolution was offered by Mr. Sprague and passed by the Convention, as follows:

WHEREAS, The system of transmitting money by mail through the present money-order system is cumbersome and unfitted to the needs of present-day commerce; and

WHEREAS, H. R. Bill 1976, recently introduced by Mr. Gardner of Michigan, provides for the issuance of a post-check currency in conformance with the recommendations of previous House committees; therefore,

Resolved, That this Twenty-ninth State Convention of the Fruit-Growers of California does heartily indorse the immediate adoption of the post-check form of currency, and that the Secretary be instructed to forward a copy hereof to the Post-Check Currency Bureau, at 825 Vermont Avenue, Washington, D. C.

In accordance with the instructions contained therein, I forwarded a copy, accompanied by an explanatory letter, to the Post-Check Currency Bureau, and received the following in reply:

POST-CHECK CURRENCY BUREAU,
WASHINGTON, D. C., February 10, 1904.

JOHN ISAAC, *Secretary Fruit-Growers' Convention, Sacramento, Cal.:*

DEAR SIR: We beg to thank you for your letter of the 4th, and particularly for the copy of the resolutions passed by the State Convention of Fruit-Growers. It is exceedingly gratifying to the friends of the bill to note the active work being done by the farmers and fruit-growers of California, who fully realize the importance of such legislation to all the people.

We trust that you will send copies of these resolutions to the Representatives from your State, as they will undoubtedly be influenced by such an expression from so important a part of their constituency. The bill is now before the Postoffice Committee of the House and we hope for a favorable report in a few weeks.

Trusting that our suggestion will be complied with, we are

Very truly yours,

POST-CHECK CURRENCY BUREAU,
CLARENCE E. DAWSON, Secretary.

The following resolution, introduced by Mr. Berwick, was also passed by the Convention:

WHEREAS, Our postal service is at present lamentably deficient in the matter of an up-to-date foreign and domestic parcels post; and

WHEREAS, The American Express Companies have found it possible to inaugurate for the British postoffice a postal stamp rate on British parcels of 25 cents for 11 pounds to any postoffice in the United States, thus proving the practicability of profitably doing the business at such a rate.

Resolved, That this Convention of the fruit-growers of California, assembled in Fresno City, this 9th day of December, 1903, hereby requests its Senators and Representatives in Congress at Washington, D. C., to introduce and support such measures as shall secure for the American citizen, through the United States postoffice, a parcels post at least as cheap and effective as that now afforded by the American Express Companies to the Briton.

Resolved, That this Convention also requests the President, in conjunction with the Postmaster-General, to conclude postal conventions for the handling of parcels up to 11 pounds weight, with all the nations who are at present members of the International Parcels Post Union; this on as favorable terms as those enjoyed by the citizens of Mexico and European lands.

In accordance with the instructions of the Convention, I have forwarded copies of this resolution to our Senators and Congressmen in Washington, and received replies from them, as follows:

UNITED STATES SENATE,
WASHINGTON, D. C., February 8, 1904.

MR. JOHN ISAAC, *Secretary Fruit-Growers' Convention, Sacramento, Cal.:*

DEAR SIR: I am in receipt of yours of the 1st instant with resolutions of the Fruit-Growers' Convention regarding parcels post and post-check system and will gladly give both matters my most careful consideration. I am very favorably disposed to support the measure, believing it to be in the public interest.

Yours, very truly,

GEO. C. PERKINS.

UNITED STATES SENATE, COMMITTEE ON IRRIGATION,
WASHINGTON, D. C., February 10, 1904.

MR. JOHN ISAAC, *Secretary Twenty-ninth Fruit-Growers' Convention, Sacramento, Cal.:*

DEAR SIR: Your letter of the 1st instant, inclosing copies of resolutions unanimously adopted by the late Fruit-Growers' Convention, held at Fresno, concerning parcels post, etc., is received.

The matter will receive my consideration.

Yours truly,

THOMAS R. BARD.

COMMITTEE ON THE PUBLIC LANDS, HOUSE OF REPRESENTATIVES U. S.,
WASHINGTON, D. C., February 8, 1904.

MR. JOHN ISAAC, *Secretary Fruit-Growers' Convention, Sacramento, Cal.:*

DEAR SIR: I beg leave to acknowledge your letter of February 1st, inclosing certain resolutions adopted at the Fruit-Growers' Convention, held at Fresno recently. I will present the said resolutions to the House of Representatives so that they may be referred to the proper committee for consideration.

Thanking you for your consideration in this matter, I am,

Very truly yours,

J. C. NEEDHAM.

COMMITTEE ON THE JUDICIARY, HOUSE OF REPRESENTATIVES U. S.,
WASHINGTON, D. C., February 8, 1904.

MR. JOHN ISAAC, *Secretary Fruit-Growers' Convention, Sacramento, Cal.:*

DEAR SIR: Your resolutions concerning the Parcel Act Bill have been received and placed on file.

Yours truly,

J. N. GILLETTE.

HOUSE OF REPRESENTATIVES U. S.,
WASHINGTON, D. C., February 8, 1904.

MR. JOHN ISAAC, *Secretary Twenty-ninth Fruit-Growers' Convention, Sacramento, Cal.:*

DEAR SIR: I am just in receipt of yours of the 1st instant, inclosing resolutions unanimously adopted by the Fruit-Growers' Convention, held at Fresno, relative to parcels post, and desire to assure you that the resolutions will receive my most careful consideration.

Yours, very truly,

V. H. METCALF.

COMMITTEE ON PACIFIC RAILROADS, HOUSE OF REPRESENTATIVES U. S.,
WASHINGTON, D. C., February 13, 1904.

MR. JOHN ISAAC, *Secretary Fruit-Growers' Convention, Sacramento, Cal.:*

DEAR SIR: I beg to acknowledge receipt of the resolutions adopted by the Fruit-Growers' Convention lately held at Fresno, and to say that I am in hearty sympathy with the suggestions contained in said resolutions, and will do what I can to secure the much needed improvements along both lines mentioned, to wit: the parcels post and post-check currency.

Yours, very truly,

M. J. DANIELS.

COMMITTEE ON PACIFIC RAILROADS, HOUSE OF REPRESENTATIVES U. S.,
WASHINGTON, D. C., February 15, 1904.

MR. JOHN ISAAC, *Secretary Twenty-ninth Fruit-Growers' Convention, Sacramento, Cal.:*

DEAR SIR: I have the honor to acknowledge the receipt of yours of the 1st instant, together with copies of resolutions adopted by the late Fruit-Growers' Convention held at Fresno, California, and in reply thereto beg to state that I shall give the same my most earnest consideration when the matters to which they pertain are brought to the attention of the House of Representatives.

Very truly yours,

WILLIAM J. WYNN.

A resolution of thanks to the University of California was passed by the Convention for the active interest taken in the work of controlling the codling-moth in the apple orchards around Watsonville. A copy of this resolution was forwarded, according to instructions, to the Acting Secretary of the Board of Regents, and the following reply was received from him:

UNIVERSITY OF CALIFORNIA, OFFICE OF THE SECRETARY,
BERKELEY, February 11, 1904.

MR. JOHN ISAAC, *Sacramento, Cal.:*

MY DEAR SIR: Permit me to inform you that the Regents received with much appreciation at their meeting on February 9th the kind resolutions of the Fruit-Growers' Convention, and ordered them placed on file.

Very truly yours,

V. H. HENDERSON,
Acting Secretary, Board of Regents.

Resolutions of sympathy for the death of Mrs. Elizabeth Shields were passed by the Convention, and your Secretary was instructed to forward same to the family of our deceased member. In accordance with these instructions, I communicated with Judge Peter J. Shields, of Sacramento, and in response received the following letter:

SUPERIOR COURT, STATE OF CALIFORNIA, COUNTY OF SACRAMENTO,
SACRAMENTO, CAL., January 19, 1904.

MR. JOHN ISAAC, *Secretary Fruit-Growers' Convention, Sacramento, Cal.*:

MY DEAR MR. ISAAC: I received some time since the copy of the resolutions adopted at the recent State Fruit-Growers' Convention, testifying to the regard and esteem in which my mother was held by that body and by her fellow fruit-growers. The resolutions do my mother's memory great honor, and among all the testimonials reaching me since her death I know of none which would have given her more satisfaction than this. The best years of her life were given to horticulture, and she was one of its most enthusiastic, industrious, practical and intelligent devotees. California has reached a horticultural development equaled nowhere else on earth, and to have it said by the assembled fruit-growers that my mother was one of the strong influences which brought about that history-making condition, is an honor of which I am deeply sensible.

Assuring you of my appreciation of the resolutions and of my gratitude to the Convention which adopted them, I am,

Yours, very respectfully,
PETER J. SHIELDS.

Resolutions of sympathy were also passed relating to the death of Brainard N. Rowley, for so many years an active worker in our conventions, and in accordance with the instructions of the Convention, I forwarded the same to Mr. H. C. Rowley of San Francisco, and received the following letter of acknowledgment:

CALIFORNIA FRUIT-GROWER, 320 SANSOME STREET,
SAN FRANCISCO, December 26, 1903.

HON. ELLWOOD COOPER, *State Commissioner of Horticulture, Sacramento, Cal*:

DEAR SIR: The resolutions of respect and sympathy adopted by the Twenty-ninth State Fruit-Growers' Convention in the matter of the passing away of my late father have been received, and I am acknowledging the same to the fruit-growers of the State through your good self. There is very little that one can say in a matter of this kind other than to express one's deep appreciation and thanks, and this I am doing on behalf of my mother, brother and myself.

Begging that you will properly convey our acknowledgment to the Convention, I remain,

Very respectfully yours,
H. C. ROWLEY.

All of which I respectfully submit to the attention of the Convention.

JOHN ISAAC, Secretary.

PRESIDENT COOPER. I will name the Committee on Resolutions at the beginning of the afternoon session. That disposes of the work laid down for this morning's session; but if any one wishes to make a few remarks, it will be now in order to do so.

MR. BERWICK. If there is nothing before the meeting, I think I see Dr. Anderson of San Luis Obispo, who has charge of the school for young farmers down there. I think we would enjoy hearing something of his success in training young farmers.

PRESIDENT COOPER. We will be very pleased to hear from him. Mr. Anderson will please come forward.

ADDRESS OF PROFESSOR LEROY ANDERSON.

You all know that the State established a school at San Luis Obispo for teaching agriculture, mechanics, and domestic science. Those are the three principal lines of work. The corner-stone of the first building was laid a little less than two years ago and the school was opened for the first time a year ago in September last, so that we are now just in the beginning of our second year, and we feel that we have a very good start indeed, and that with the equipments, the buildings, and the support which the State has extended we are showing that there is a need for the school that is established and that we are in the way of supplying that need.

The great work which we are doing is of a high-school grade; that is, we take the students who have finished the eighth grade of the grammar school; they are admitted to us without examination. And most of the students are of that grade. We have admitted a few who have not passed the eighth-grade examinations, and some of them are having rather hard work. We have some who have had two or three years in the high school, and, of course, they have much easier sailing.

You are no doubt particularly interested in the agricultural line of the work. I feel it is a matter of interest to know that one third of the boys who are with us to-day are out-and-out agricultural students. It is usually the case, and has been the history of all institutions in the East, especially of the agricultural colleges founded under the Act of 1862, that the large majority of the students enter for engineering and mechanics courses, and knowing that rule, and knowing what a struggle agriculture has had in those institutions, I feel very much gratified that one third of the boys go in for agriculture. The first year's work is botany or plant study, the preparation of various lines of the physical sciences, which, as the term implies, is a mixture of elementary physics and chemistry.

Every boy and girl can not know too much about arithmetic. The arithmetic of the school embraces the working out of feeding rations and fertilizer problems, and problems of building, everything which relates to the mathematics of agriculture; and after that, going on into algebra. We also give them about ten periods a week, that is, about three afternoons, of carpentry work in the first year, and freehand and mechanical drawing, and then about one afternoon a week they have to work in the laying-out of the grounds—our grounds being very new indeed—laying out grounds and gardening, or anything which happens to come up and which needs to be done.

The school was established with the idea of making a practical school in agriculture, a school in agricultural practice, but I know that we are not meeting the extreme desires of some, in that we do not give enough actual practice on the farm. I will say that the policy of the work of our school is very similar to that of the agricultural colleges of the middle west, only ours is of a much lower grade. We take in students at the age of fifteen years, while the colleges will not take them until they are seventeen or so. We do not put the boys to plowing or harrowing, or things of that kind. We do have them prune the trees when they need to be pruned, and we expect them to plant the trees that we have to plant, and so far as dairying is concerned—milking, and making butter and cheese—if a boy does that continually we pay him for it.

The students do a great deal of manual labor in which there is instruction, as for instance carpentry, and of course for that there is no remuneration, but when the manual labor ceases to carry instruction with it, then the American boy thinks he has got to have some pay for it, and so we have to follow that idea. We put up a fairly cheap building, for a blacksmith shop; it was erected last spring, and the building is 40 by 100 feet, one story, entirely of frame, battened, dressed lumber, oiled inside, a building which would cost about $2,500 or $3,000. Our students in carpentry did all the framing, and the truss work of the roof, and all of the framing of the timber. The finishing was done by contract, and the carpenter who had the contract said he never saw a better piece of work in framing than that done by our boys.

And so we expect as far as possible to have our buildings put up by the students, and we have them do as much as possible of the repairing, the building of wagon beds and hay racks, and things of that kind that can be done by the students. And much of the furniture of the school buildings is being made by the students in carpentry. We are trying to make the work, so far as agriculture is concerned, of the nature which every boy is apt to run against on a farm, the idea of the founder—Senator S. A. Smith of Bakersfield—being that the work of the school shall be with a view to educating the boys and girls to useful lives in their home communities.

Just a word about the girls, which of course is interesting. We have the girls enter on the same basis as the boys, and give them work in the various lines of domestic work or domestic science, such as sewing, dressmaking, and millinery, so that now we expect they will soon be able to take in sewing from any ladies in town who wish to have work done. And then there are the various lines of cooking and household economy, and along with that, English and plant study, and some dairying and drawing, which naturally goes with it. I thank you for your kind attention.

REMARKS BY MR. EDWARD BERWICK.

If anybody else would like to occupy the floor I will sit down, but if not then I would like to say a few words. The thought just struck me that we fruit-growers of California are not sufficiently proud of ourselves and our work. It is far more important and far more desirable to know the truth to-day in matters regarding agriculture than it is to know the truths of history. Whether Mary Queen of Scots was a saint or a sinner, or whether Henry the Eighth was a monster of iniquity or devoted to caring for his subjects in the best way he could, are matters of exceedingly little use to us. It does matter a great deal to us to know what bug will eat the scale bugs that are getting into our orchards; it is a matter of far more importance and interest, not only to us but to all the country, and I object, sir, to our being very modest and hinting in the least way that University extension in agriculture is worthy of less attention than lectures on history or anything of that kind. If it is less worthy I would like to know why it is less worthy. I asked this question at the University Farmers' Institute, and all Mr. Wickson could say was—I suppose it was because of his innate modesty—he said, "Yes, that was the only reason." And now, gentlemen I believe in modesty. It is a fine thing to be modest. I am modest. I do not hesitate to say my opinion before you in public, for I do not believe in being over modest. You know Longfellow says, "Be bold, be very bold, be not too bold." I would say to you, "Be modest, be very modest, but do not be over modest." If it is a question of agriculture or history, do not you agriculturists take a back seat. See that agriculture comes before history. Agriculture is of more importance than your history, and don't you people forget it. When I was young they primed me with Latin and Greek. I found myself at the age of 16 with a smattering of Latin and Greek and not fit for anything. I read about history and did not know the first thing of agriculture. Now I want to have you all feel proud of yourselves and your University; I want you to feel that you own that University and have a right to say what you want taught there. Now the acme of education in my day was this: to make a poetical speech and put in a piece of Latin or Greek, and the bigger the piece of Latin or of Greek the bigger scholar you were. Now if I made a speech in San Francisco and began throwing Latin or Greek, the audience would say that man was no good. But if you learn to do things—the doing of things is always fashionable. The raising of wheat is fashionable. Men must live. If you want to learn Latin, it is still taught. If you want more schools in agriculture in preference, you have a right to say so. Why that thought came about was this: Years ago the ecclesiastics practically had a monopoly of what they called culture. They knew something of Latin and Greek. They said their prayers in Latin so that the common folks could not understand them. You have to mystify the common folks to keep them down. Now we do not believe in mystery.

What is the object in preparing yourselves in the high schools? For life? No, sir; not for life, but for the university! There are men in the university who have Latin to sell. If they can not make a demand for their Latin they can not sell it. Your prunes are the same. If you can not make a demand for your prunes you can not sell them. Some might say that your boys should learn Latin, but many of you do not like to interfere and say that it is all nonsense, you don't want your boys to study Latin any more. We will teach them the things that are useful in life, such as agriculture or horticulture. The people of the University do what you want done and what you are paying money to have done. If you do not run it to suit you, the bosses will run it to suit them and not to suit you.

At this time a recess was taken until 1:30 o'clock P. M.

AFTERNOON SESSION—FIRST DAY.

TUESDAY, December 6, 1904.

The Convention was called to order at 1:30 o'clock P. M.

President Cooper introduced Dr. David Starr Jordan.

THE THEORY OF SELECTIVE BREEDING.

BY DR. DAVID STARR JORDAN,
President of Leland Stanford Junior University.

Ladies and Gentlemen: I have been shut in for the last ten days with tonsilitis so that I have not had any chance to talk. Ordinarily I have refused every chance recently in order that I might hold my voice for you who have the very great advantage of letting me talk in the middle of the day without keeping me up late at night, and letting me run away as soon as I get through, which I shall have to do to-day.

I want to speak very briefly of the theory of selective breeding of plants. You know, of course, that here in California we have one man who understands a theory that is open to all in the matter of selective breeding and has carried the practice very much farther than any other one man living. Luther Burbank stands easily first, and all in a class by himself, in the matter of the practical study and the evolution of plants.

The theory is very simple. I have been interested in the development of the theory instead of in the actual practice, and what I have to say—I have not done anything myself particularly in the breeding of plants, but I have done a great deal in the breeding of theories, so I bring that up first.

We very much need in this country lap elephants—elephants of a size suitable for being held in the arms; so that their tusks would not be at all dangerous, so that it would not be in any way disagreeable to deal with them. Now the ordinary commercial elephant of Africa or India is altogether too big and clumsy and too likely to be ferocious; his disposition is bad, and his skin is rough and hard and ought to be softened up.

Now this is not exactly nonsense. If this want were a very great one, one that we all have felt, and one that we have continued to feel through several generations, there would be nothing simpler than the production of lap elephants. We would take the ordinary breed of elephant; we would take a rather small one, if we could find one—but even that would not be all important—and we would cross it with another elephant sufficiently different—the more different the better. Now the crossing of elephants, or any other crossing, is something of a hybridization. There are no two elephants alike, no two of the higher animals alike. Nature makes all sorts of variations among animals as among plants. Each animal and each plant has to have two parents. There are some things that are alike, but I think the animal and the plant kingdoms have practically none; there are none at all when we come to the higher animals. The fact that each individual has two parents and each of those parents has another separate line of ancestry is a very strong factor in bringing about variation in the offspring. You know that each one of you has twice as many ancestors as your father and mother had, so that one generation sets you a great ways farther along in the matter of ancestors. In this way you are certain to draw different individual lines of descent, so that no two men are alike. No two elephants are alike. If we take two elephants very much alike, their progeny would be very close to them; but if we take two quite different, one quite large and one smaller, then we would have progeny more or less different from either. Some would be larger, some smaller. A few would be larger, perhaps, than either parent. Some would be smaller, perhaps, than either parent. We would take these smaller ones and cross them with other small elephants, and in that way get another pair of elephants, and some of these would be smaller, and some larger, than the original ones occasionally. Now steadily working along that line, crossing with individuals quite far apart so as to get variations, it is possible to get elephants considerably smaller. We could develop a breed of small elephants, and in time gradually work the elephant down to the required size. It might take two or three thousand years, but it could be done if we kept at it for a sufficiently long time.

You know all dogs are descended from wolves. In Mexico there are dogs that are only three or four inches long, without any hair on them, not much larger than a good-sized mouse. If you pinch their tails their eyes bulge out, and yet they are descended from wolves. They are not only lap dogs, but lap dogs reduced almost to their lowest terms.

Now this supposititious way of dealing with elephants is what Mr. Burbank has done and is doing with plants. He took the ox-eye daisy that is such a nuisance in the fields of the East; it is wild there and very destructive to the fields because the roots are so hard to eradicate. He took one of the largest of these and began to save the seeds from it, and in that way, by what is called selection, he got some that were a little larger than the common variety. He crossed these with a daisy that is quite different, with the common wild Japanese daisy. Crossing those two together he got a good many varieties — some of them larger, some smaller. From these various kinds he chose those suited to his purpose, and the result is a daisy much larger than the original one. Taking one of these large daisies and crossing it with one a little more yellow, breaking up the amount of yellowness, and getting the plant in a way broken up so that among the different seeds there will be quite a variety among the different plants, it is possible to gradually extend this yellow, and in time it may be possible to get the base or ray that will be red. If that is done he has only to go on building onto that red and we shall have what we have so long needed at Stanford, a cardinal-colored daisy.

In the same way Mr. Burbank has taken our ordinary poppies, the ordinary wild poppy of California (*Eschscholtzia californica*), and found one of these which, instead of being orange in the usual way, had a little bit of deeper orange, real red in the base of it, as though there had been a little cardinal thread caught there. Taking that exceptional one he saved the seeds thereof, and some of them had a little more than the others, and by pure selection, without any crossing whatever, he has gone on until finally he has now about fifty cardinal-colored poppies, pure crimson, deep rose-colored, without any of the original yellow or orange in them.

Now I have touched two or three different principles to which I ought to refer again. The egg of any animal or the seed of any plant is originally a single cell, set apart for reproduction. This single cell will not develop until it is united with another cell, a male cell. That is true in nearly all cases; practically true of the whole animal and plant kingdom. The female cell, the ovule, needs to be united with the male cell. We have found, as a matter of fact, that the egg or seed differs from a single cell of the ordinary kind in having only half of the amount of hereditary material, only half of the substance in it which determines how the resulting animal or plant is to be built up, and we find that the pollen grains, which are the male cells, or the male cells of animals, are also single cells, which at the time they are ripe contain only half the original material which determines as they grow how the plant or animal shall be built up. Now in the formation of any new individual we have these two new cells united to form a new individual, and out of the mixed hereditary material the new creature is built up. Now take two plants or two animals that are a good deal alike, and the hereditary material in the two cells will fall right together and the resulting animal or plant will be built up without any difficulty. But when you take, as Mr. Burbank did, the raspberry and the strawberry—take the raspberry plant and fertilize it with the pollen of the strawberry, and you have a resultant fruit that is half raspberry and half strawberry, and when it attempts to develop it has got to make an effort to develop along both lines. It is hard to work them together. It starts out all right, sends out roots in the usual way, sends out strawberry stems, but by and by it has a raspberry vine coming there, as it were, with a raspberry tendency. Then it begins to send out a higher stalk and then it has a flower. Now it is comparatively easy for it to bloom, because the flowers are very much alike; but when it comes to making fruit then their plans disagree. There are two hereditary principles that are opposed to each other.

The point of all this is that nature takes great pains to see that no two of her germ cells, either male or female, no two pollen grains, and no two ovules, are ever exactly alike. And then she takes pains to see that no individual can possibly have the same parents that its father had. Now the whole principle on which Mr. Burbank works is, in the first place, selecting the individuals that fit most easily into his scheme, whatever it may be, and selecting from the progeny more or less like them. And secondly, in crossing pretty widely separated individuals so as to get material quite different, and working with them.

I have here two or three pictures copied from Mr. Burbank's photographs. Here is one of the walnut, an experiment in crossing the Japanese walnut with the English walnut, so called because it does not grow in England. He has about five thousand little trees that have sprung from the tree formed by crossing the European with the California walnut. Now this cross of the European and California walnuts is quite different from either. The tree grows to a larger size, has not very much fruit, is quite different from either, and the growth would be very much more rapid. From this first cross we have a new tree; in the second generation we see the character all broken up. There are some of these very much like the parent walnut; some of them have many leaves, some have very few; some of them involutes; some of them have very broad leaves, and some have leaflets with smooth edges, and some of them regular and some rough. Some of these trees grow only about four inches in a couple of years, and some grow four feet in the same time.

Sometimes considerable variation is made by the crossing of two pretty widely separated trees of this kind. Now this is for the purpose of making the species "wabble," as Mr. Burbank calls it. That is, getting the two plants, one of one species and another of another species, mixed up, so that the individuals of some may have the qualities of one and some of the other. Knowing that, it is possible to have all sorts of variations. Here is the case of a cross between the Japanese walnut and the so-called English walnut. When we begin to break up the species, sometimes individuals will go farther away, and when they get far away in the direction you want them to go, then you have one that it is worth while to perpetuate.

There is a little plum growing half wild in France that has almost no seed. The seed is not inclosed in a stone, but is soft, the stone being itself very fragile. Crossing that with the French prune, these are all seedlings as a result of that cross. Some of them are very much like the French prune and some like the original plum. What we want to get is one that has the virtue of the French prune, or the sweet prune, and the seedlessness of the other. This plum can be used to cross with the French prune; this is not very good yet as a fruit. When we get a prune that is without any stone, like the wild plum, we will have a prune as much better than the old one as the navel orange is better than the original ones. We will have a prune that is meat all the way through.

Some time ago Mr. Burbank, by crossing different walnuts one with another, got a walnut that he regarded as very nearly perfect. But it has one vice. The birds can get into it because it is so soft. It is a good thing for a walnut to have a soft shell; it is a good thing to have a good deal of meat inside of it, and it is a good thing for that meat to be of good quality without any oil therein to turn it rancid; but it is a detriment for a walnut to be so soft that the birds can get into it. Now here is another walnut that was perfect in its way, except that it was a little too easy to get into it, and certain birds of California, the bluejay and some others, learned very quickly that it was desirable. Now by giving it another turn, crossing it with this big walnut that has a good thick, tough hide on it, it is possible to start a new combination that will have some of its members having a very thick skin and very little meat, and some of them a thin skin and much meat, and some having just the right amount of shell and meat. I have lately received from Mr. Burbank two kinds that are produced by the crossing of this ordinary walnut with the walnut with a thicker shell. These represent pretty nearly perfection in walnuts up to the present day. The fashions change with walnuts as with everything else, and by the time these trees are fully grown they will be very likely out of date. Something better comes on. Or it is possible, as you know, to force these trees very rapidly by taking the desirable kinds and grafting them on a tree so that the limb becomes, instead of the top of a small tree, the limb of a large one.

The point that interests us in all of these matters is that, in the first place, every grain of pollen and every ovule is separated from every other grain of pollen and every other ovule, so that starting right we have no two individuals quite alike. Then in the formation of a new plant we have to unite one of these ovules with another. We find that in a flower like those it is possible sometimes for a grain of pollen from here to fertilize an ovule over there. Nowhere in nature is it desirable that the parentage should be very close together. And so we have in the human race a prejudice against the marriage of cousins, or between brothers and sisters, which is simply prejudice and custom, apparently. Nevertheless, there is a provision in nature to prevent the ovules of plants from being fertilized by the pollen from the same plant; just as there is on a machine a device to prevent the machine from going too fast or too slow. Very often it is arranged that only insects going from one flower to another will be able to carry the pollen.

Now within the same species, as we call it, no two seeds are just alike, no two ovules are just alike, and no two pollen grains are just alike. In some species they are a great deal alike. Now by simple selection, that is, by selecting those that come most nearly to what we want, as in the case of those poppies that have the most red on them, it is possible in a long time to make a great deal of change in any species. It is possible for us to develop lap elephants, as we have developed lap dogs. If we want to get along faster, the crossing of one species with another, as Mr. Burbank has done in the case of the French prune and the little wild plum, or as he has done in the case of these new walnuts, we can cross one species with another. Now if the plants are very different, as in the case of the raspberry and strawberry, we get no fruit because the plant can not agree with itself as to how it is going to develop. If you could imagine a cross between a horse and a cow, we would find that in developing the horse-cow creature it could not agree on one line of policy; it would not know what to do; it would not develop horns or get along without them. Now it is possible to help this process of forming new kinds, new races of animals and plants, along very rapidly by judicious crossing. While these walnuts are of the first generation, they are very different one from another; yet it would, by selection, or following along some one of these lines and keeping at it, be possible by and by to develop a species which should breed true, just as the loganberry, which is the result of a chance cross, has come to breed true as though it were a genuine species. It has, nevertheless, been brought into such unity with itself that it develops into a new, distinct, and recognizable species.

But what it would take ages by ordinary selection to accomplish, could be accomplished in three or four years by expert work. It requires just as great skill in manipulation to do this properly as it does to make the finest kind of a watch. I understand the theory of watch-making, but if I undertook to make one I am sure it would not keep very good time. And I am sure if I should try to improve on Mr. Burbank's walnuts by going back to the original stock, it would be a great while before I got one that would compare with those which I have passed around. I thank you for being so patient.

Upon motion, a vote of thanks was extended to Dr. Jordan for his able and interesting address.

PRESIDENT COOPER. I have just received the following telegram from Governor Pardee:

SACRAMENTO, CAL., December 6, 1904.

I regret that, owing to illness, I am not able to attend the Fruit-Growers' Convention, as I had expected to do. Please say for me that I recognize how much the future welfare of California depends on the prosperity of the great horticultural industry, and that anything which promises to promote this is good State policy. I trust that the present convention may be productive of large benefits to the fruit-growers.

GEO. C. PARDEE.

VALUE OF POLLINATION IN THE CULTURE OF THE APPLE, AND SOME OF THE REASONS WHY FLOWERS DO NOT SET.

By A. N. JUDD, of Watsonville.

All fruit-growers have seen their trees full of bloom, and yet have but a small amount of fruit set. To know the causes of this loss, and the prevention thereof, would perhaps save many from digging up what is now a profitless orchard.

Nature seems to make an extra effort in the production of bloom. The question arises, is this effort for the purpose of supplying pollen for the less than twelve per cent of the flowers that set when you have a full crop, or is the extra eighty-eight per cent a superfluity? We think not. The short space of time in the life of a blossom (see Plate 4 on page 216) when it is susceptible of pollination demands more pollen than the twelve per cent supplies, hence nature makes up the deficiency that would arise if only one eighth of the blossoms were produced by adding the extra eighty-eight per cent; but, however, it is the recurring short crop that worries and causes us to reflect and study causes, such as unhealthy fruit buds, or injured pistils by rain, fungi, frost, or blighting winds, and the main cause of self-sterility, which is, that the pollen of a variety is unable to pollenize the pistils of that same variety, so where there is a general short crop for a number of seasons, self-sterility is most assuredly the cause.

The grower, in order to be certain of self-sterile varieties, has only to

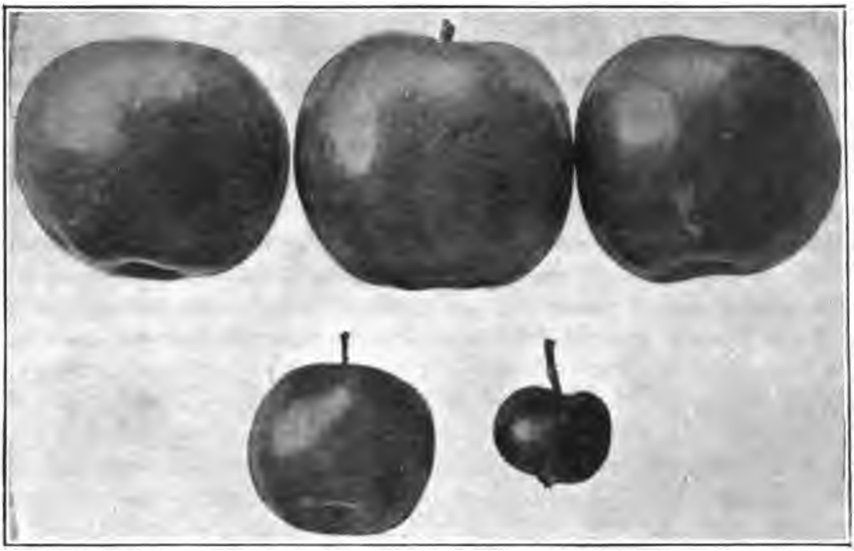


PLATE 1. STARK.
From Wagner pollen above; from Stark pollen below. Marked benefit from cross-pollination.

PLATE 2. LONGFIELD.
From Greening pollen below; from Longfield pollen above. Marked benefit from cross-pollination.

closely observe the following conditions: If you have a block of say five or ten acres, and the outside trees around the block have more fruit than the center, self-sterility is surely indicated. Other proofs of sterility are the falling of young fruit when partially grown, or any radical change of shape and size when the trees are getting old, or the lack of seed or their fertility.

It is useless to discuss the scientific reasons, even if we know them, of defective pistils or the lack of stamens; suffice to say that there are over fifty species of plants that are sterile with their own pollen.

While Darwin was not the first to find the value of cross-pollination, his "origin of the species" certainly gave a great impetus to the study. Mr. Waite, under the direction of the United States Department of Agriculture, published Bulletin No. 5, Division of Vegetable Pathology, in 1894, which caused many other investigators to make practical use of the information imparted, and yet none of them seemed to put sufficient stress upon the fact (if they knew it, which I doubt) that varied variety will do better, whether they are fertile or sterile, if planted together, provided of course they bloom together.

For instance, a Bellflower and a Wine Sap, if growing together, the very early flowers of the Wine Sap will fertilize the last flowers of the Bellflower, while the pollen of the Bellflower seems to be overripe to be of service to the Wine Sap; yet alone, both are self-sterile, unless under the most favorable conditions; and yet two varieties can be sterile alone, but will fertilize each other if blooming together, as will the Newtown and Bellflower, and while not only greatly increasing the crops of each, will also influence the size and shape. (See Plates 1, 2, and 3.)

To illustrate: In 1888 the writer planted an orchard. Among the varieties was a block of Newtown Pippins. Climatic conditions were unfavorable, and after a few years the fruit lost its long, corrugated, or five-crown shape, and very perceptibly flattened, besides growing much smaller each year. Not desiring to lose the trees at once, a Bellflower tree was put in the center of each vacant square between the rows. When the Bellflowers began to bear, the intention was to dig out the Newtowns; but results, however, prevented. With the shelter of the larger-growing Bellflowers and the cross-fertilization of each other a radical change was brought about and also a revelation to the owner. First, both varieties were greatly improved in crop, and also the character of the fruit; particularly was it so with the Newtown Pippins. They regained their original size and shape as when the trees were young (see Plate 3), while the shape and size of the Bellflowers were not so marked. The disposition of the latter tree is to *overbear*, while a solid block adjoining, of four hundred trees, of the Bellflower variety, are still *shy bearers*, and especially is this so in the center of the block.

To again illustrate: That much neglected family orchard of its many varieties together, pruned and cultivated by loose stock, never fails to have a crop, and some specimens are even superior to those in the much-petted orchard that was planted later in solid blocks for commercial purposes. The cause is lack of pollination. Cross-fertilization will prevent deterioration of the true type and will also stimulate each other. This is proven in the whole animal and vegetable kingdom; why not in fruits? If one were to plant an orchard he should mix even self-fertile varieties, if they happen to be the varieties desired, and *bloom together*. If this be true, how much more would it be necessary to mix fertile with self-sterile varieties?

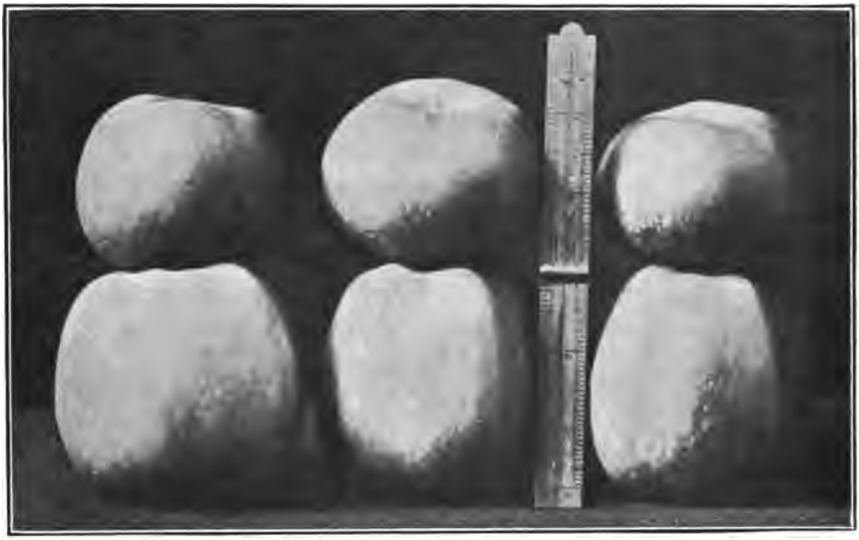
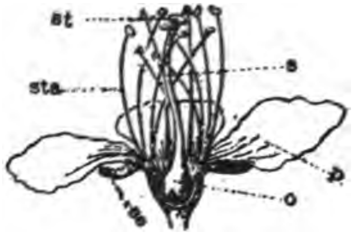
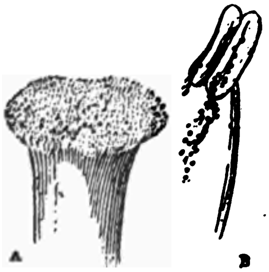


PLATE 3. FROM 15-YEAR-OLD NEWTOWN PIPPIN TREES.
Restored from shape above by its own pollen to the shape below by cross-pollination with Bellflower in three years.

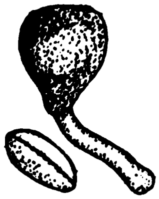
The matter of selecting pollenizers depends wholly upon the individual's immediate locality. Study well the different varieties you wish to plant, their time of blooming in your neighborhood, and especially their natural affinity. (You will note the varieties in Plates 1, 2, and 3 have that affinity for each other). Experience no doubt will prove other varieties as valuable pollinates. But let us not jump at conclusions because a rift in the cloud of ignorance discloses a valuable fact, and do not too hastily condemn until you have made exhaustive experiments with a view of getting greater additions to what we already have; but to more thoroughly interest you, we suggest a perusal of articles from recent investigators, such as Waite, Goff, Waugh, Craig, Kerr, Crandall, and Hideman, on orchard fruits; Beach, Earle, Munson, and Whitter on grapes; and the Oregon State Board of Horticulture, to which we are indebted for Plates 1 and 2.



The structure of a Plum blossom. *se.* sepals; *p.* petals; *sta.* stamens; *o.* ovary; *s.* style; *st.* stigma. The pistil is comprised of the ovary, style and stigma. It contains the female part. The stamens are tipped with anthers in which the pollen, or male part, is borne. The ovary *o,* ripens into the fruit.



B, pollen escaping from anther. A, pollen germinating on the stigma. Enlarged. The transfer of pollen to the stigma is called pollination.



Pollen grain germinating. Greatly magnified.

DETAILS OF A FRUIT BLOSSOM.

At 7 A. M.

At 10 A. M.

At 3 P. M.

At 8 A. M. the next morning.

The Opening of a Flower of Kieffer Pear. The flowers of pears and apples have five styles and stigmas. All natural size.

(Courtesy of *American Gardening.*)

PLATE 4.

Final Suggestions.—In planting an orchard alternate each variety *both ways* in the row; then the varieties will row on the angle so that the picking of the fruit in separate varieties is not interfered with. But if you have planted in solid blocks, and get only partial crops, top-graft an occasional tree in the rows with fertile varieties and put a few stands of bees in the center of the block while the trees are in bloom; this will partially relieve you of the continual short crop.

In conclusion, it is proper to mention some of the known varieties of apples that are nearly or quite self-sterile and are considered risky to plant; among them are the Bellflower, Newtown Pippin, Spitzenberg, Willow Twig, and Wine Sap. Self-fertile are Baldwin, Ben Davis, White Winter Pearmain, Rhode Island Greening, Red Astrachan, Smith Cider, and Arkansas Black Twig. But it is well to here reiterate, that regardless of their fertility, two varieties planted together in alternation in the rows will improve each other, if *blooming* at the same time.

NEEDED LEGISLATION.

BY FRANK E. KELLOGG, OF GOLETA.

A hundred years ago Thomas Jefferson wrote that "laws and institutions must go hand in hand with the progress of the human mind." These words are just as true to-day as when written by "the sage of Monticello." And if they are true, then there never before was a time which demanded such rapid changes in our laws and institutions as the present, for without question the progress of the human mind to-day is more rapid than ever before.

The discoveries of science, the creations of inventive genius, the wonderful widening of the field of human activity, and the rapidly shifting economic conditions of the modern world, have forced upon mankind the imperative need of legislation that is adapted to the new conditions. So pressing is this need that on every hand you hear able and progressive men calling for a more equitable system of taxation, for municipal ownership of public franchises, for government ownership of railroads, for direct nominations in place of our present primary system, for restriction of the power of the great corporations, for better police and sanitary regulations in cities and counties, for the teaching of agriculture in our public schools, for insect control, for inspection of nursery stock, for quarantine regulations for plants, fruits, and cattle, and for a hundred other things made necessary by our rapidly expanding civilization. In fact, a very large percentage of the papers presented at our farmers' clubs, institutes, and State fruit-growers' conventions are written to call attention to needed legislation.

It is not my purpose, on this occasion, to advocate any of the needed measures already indicated; but I shall undertake to illustrate a means by which all really necessary laws may be speedily secured. Our government is composed of three departments—the legislative, the executive, and the judicial. The needed legislation which I shall endeavor to point out is in regard to the legislative department.

As at present constituted, the legislative department is chiefly in the hands of the Legislature, composed of representatives elected by the people. The proposed reformation is not to abolish the representative feature of our legislative system, but only to supplement it with what is termed "optional direct legislation," commonly known as the "initiative and referendum."

The initiative means the proposing or starting of a law. That is to say, when the Legislature fails or refuses to enact a law which the people want, then they shall have the right to initiate or propose a law themselves by a petition signed by a given per cent of the voters.

The referendum means the vote of the people on a measure. That is to say, when the Legislature passes a measure, before it becomes a law, the people shall have the right, on a petition signed by a given per cent of the voters, within a specified time, to have the measure referred to a popular vote for ratification or rejection. The word "referendum" simply means referred to the people. It also includes the vote of the people on any measure which they themselves have initiated or proposed.

Optional direct legislation is simply an enlargement of the principle of democratic government.

The fundamental idea of our government is that the people themselves constitute the only sovereign; that all authority resides in them, that power belongs not to the individual, but only to the office which he may hold; and that the official is not a ruler, but only an agent of the people.

The original legislative plan instituted by our colonial forefathers, the first settlers of New England, was a pure democracy. That is, the people voted directly on all measures; and in their town meetings they have preserved this plan down to the present hour. And so dear to them is it, that oftentimes they have refused to incorporate their towns, even after they have reached the unwieldy size of ten or fifteen thousand inhabitants, because in so doing they must give up self-government and pass into the hands of representatives.

Originally all the laws of the New England commonwealths, as well as those of the towns, were made by the direct vote of the people at great mass meetings. But after a while the body of free citizens became too large and too widely scattered to meet and enact laws in this way, and so the pure democracy gave way to the system of the making of laws by delegates or agents, elected by the people, which proved to be more convenient for large and widely scattered communities.

The representative system would have been a great improvement in every way, if the people had retained the privilege of exercising the power of direct legislation whenever they saw fit to use it. That is to say, if they had safeguarded the representative system with the optional initiative and referendum, which reformers are now advocating, then the representative system would have been truly representative, and would certainly have been a very progressive measure.

But when they changed from legislation by the people, to legislation by delegates without this precaution, it became a dangerous measure, fraught with momentous consequences. It was, in fact, a change from a real democracy to an elective aristocracy.

Under the former system no laws were passed that the majority of the people did not want, and all laws were passed that they did want. But under the unrestricted representative final-vote system, many laws are put in force that the people do not desire, and the legislatures often neglect or refuse to make laws that the people do desire.

Without the initiative and referendum, the representatives, so far as legislation is concerned, are as truly the rulers of the people during their term of office as are hereditary monarchs during their terms of office.

The only legislative powers the people reserved for themselves were the management of their local affairs in their town meetings, and the adoption of their constitutional laws, and amendments thereto, leaving the wide field of statutory law entirely to their delegates, or representatives. And the only punishment for the misuse of the power thus conferred upon their delegates was their possible refusal to reëlect them to office. In other words, they retained the privilege of choosing a new set of masters every two or four years, as the case might be.

The first section of the first article of the Constitution of the United States declares that "all legislative powers herein granted shall be vested in a Congress of the United States, which shall consist of a Senate and a House of Representatives"; and the State legislatures, and county boards of supervisors, and city councils were naturally instituted on the Federal plan—the representatives from the top to the bottom of the system being entrusted with the final vote in all statutory laws.

It was exactly the same as though a farmer should employ a crew of men to run his ranch for a term of years, and then not only relinquish the power to discharge them for any misconduct during that time, but in addition give them complete authority to run the ranch just as they saw fit, regardless of the welfare or the wishes of the owner—with the only incentive for good and honest management, pride in their work or the fear of not being reëmployed when the term expired. How long do you think a farmer in our day would be in business on such a plan as this? And how long do you think our Government can prosper, doing business on exactly the same plan?

With all the unwisdom inherent in this plan, still. in its early application, no evil consequences were apparent. For it was instituted in an age when there was little or no incentive for legislative wrongdoing. And in those simple, primitive days the high sense of public honor was a guarantee that the legislator would make laws in the interests of all the people.

Since then more than a hundred years have rolled away. How changed the scene! What has happened ?

Gigantic municipalities have taken the place of the little villages of our ancestors. And these great cities are lighted by gas and electricity owned by private corporations. More than two hundred thousand miles of railroads have been built by private companies. Gigantic private trusts have gained control of the oil and coal fields, and of the iron, copper, silver and gold mines; and thousands of streams of water are owned and controlled by private syndicates. As a natural result there are giant private corporations, and multi-million dollar trusts seeking special legislative favors by means of bribery.

At our mother's knee we all were taught to pray, "Lead us not into temptation," yet we are sending men to our legislatures where the very power we have conferred upon them invites unbounded temptation to fraud, and because they yield to temptation, greatly needed reforms are prevented.

At the present hour nearly all the leading nations of the world have postal telegraph systems ; and wherever they have them the service is marvelously cheap as compared with the United States. For example, in England they have a uniform rate of twelve cents for twelve words, for all distances. Why have we no postal telegraph system? Is it for lack of understanding, or lack of public sentiment? By no means; for the people everywhere are in favor of it. Its value is too evident to admit of any questioning whatever. Is it because there is something in the charters of the telegraph companies which forbids government ownership or competition? Not at all. The fact is, the charter of every telegraph company provides that they shall sell out to the Government whenever it shall so demand, at a price to be determined by Government appraisers.

Then, if the Government has the power to immediately establish a postal telegraph system, and the people generally desire it, why is it not established? There is just one reason why. It is because the telegraph companies, with their hundreds of millions of dollars, and the vast revenues from their valuable franchises, are able to purchase the legislation necessary for their perpetuity, and until the people have the power to vote directly on the issue, we may expect to go on indefinitely paying for our telegraph service ten times what it is actually worth. Exactly the same conditions prevail with regard to the parcels post.

For 60 cents the German farmer can send 110 pounds of produce by mail to any part of Germany or Austria, and it will reach its destination as promptly as a letter. Why have we not a parcels post as cheap and efficient as this in the United States? You find your answer in the express and railroad lobbies, whose money controls legislation along these lines, and until the people have the power to adjust this matter by direct vote, we may expect to go on paying six or eight times as much for the transportation of small parcels as the service is worth.

We, the people, who call ourselves sovereigns, have at present absolutely no means whatever by which to secure the legislation we so much need. We can only petition, that is, humbly pray, that our legislative masters grant our requests,—and experience has proven that they are not very likely to do so if they are well paid for denying our petitions.

What would you think of a man who would appoint an agent with power to defy the authority of the man who appointed him? Yet this is exactly what we do in the case of our legislators.

By conferring upon our representatives the power to cast the final vote in statutory laws, we have invited the worst of men to make politics a profession, and have well nigh driven from political life the ablest and best of our citizens. It is almost impossible to elect an honest man to a legislative office, or to keep him honest after you have elected him. And under the baneful influence of legislative bribery and fraud, all the way up through the city councils, the boards of supervisors, the State legislatures, and to the Congress of the United States, you may find startling examples of corruption, and no man can wonder at it, for to obtain some special legislation, or a valuable franchise, a rich corporation could often afford to give a hundred thousand dollars for a single vote—a temptation too strong for any ordinary mortal.

Under this evil system, franchises of incalculable value, which ought to forever belong to the people, are given away to private corporations.

Although called a representative system, it is the most unrepresentative system imaginable, for oftentimes the strongest remonstrances and petitions of the people are utterly unheeded, and their most sacred rights are ruthlessly trampled in the dust.

The solution of the problem, as already indicated, does not lie in the utter abolition of the representative system and a return to the pure democracy of our colonial ancestors, for not only would a pure democracy be unwieldy and impracticable in our day, but also there is as great need of expert service in lawmaking as in any other department of human activity. We can no more dispense with the legislator's services than we can do without the physician, the teacher, the mechanic, or the inventor.

But the remedy for our legislative evils will be found in supplement-ing our representative system with a provision for the use of the initiative and referendum whenever a reasonable percentage of the people shall by petition demand it.

Their use in reference to statutory enactments should not be obligatory as is the case of the referendum in regard to our State Constitution and amendments thereto, but should be optional only. We are persuaded that the necessity of calling them into exercise would be exceedingly rare. And whenever the power should be invoked, it could usually be done in connection with some general election, thus obviating extra expense and annoyance.

Under such a system, legislative corruption would entirely cease, for who would bribe a legislature or municipal council to grant an unjust charter, give away a valuable public franchise, or pass an unrighteous law, knowing that the people reserved the power to reject them by popular vote? Who will buy from a man who has not the power to deliver the goods? And to bribe all the people, would be a physical impossibility.

The third house in our legislatures, known as the "lobby," would go out of existence, and legislative corruption would cease, for its very cause would be removed.

We are not advocating any new principle, but simply a wider application of a very old principle. Ever since the foundation of our government, the two extremes of our legislative system, the New England town laws and our State constitutions with their amendments, have been subject to the referendum vote of the people, and these have always proven to be our purest and best laws. If direct legislation works so admirably at the two extremes of our system, why will it not also give satisfaction in the great intervening field of statutory law? For more than a hundred years we have had the two systems side by side, the one always giving us pure, wholesome, and satisfactory laws, invariably founded on the public welfare, and the other often giving us impure, unwholesome, and unsatisfactory laws, and all too frequently founded on private interests. Is not a hundred years time enough for experimentation? Let us therefore accept the truth which our experience has demonstrated, and at the earliest possible moment engraft the power of direct legislation into our statutory system.

For more than two score years the Swiss Republic has had the initiative and referendum in full force, and they have not only long outgrown the experimental stage, but have given to that people the reputation of being the most enlightened politically, and the best governed nation of the world, with the fewest and simplest laws—and perhaps the smallest percentage of lawyers, having only one seventh as many as we have in proportion to population. As for the comparative number of laws introduced, Prof. Frank Parsons informs us, that in a recent

Swiss national legislative assembly of usual activity, sixty-five measures were introduced, twenty-four of which were passed, while at about the same time the United States Congress introduced twenty-four thousand bills!

Finally, and most important of all, direct legislation would open the gateway to all other needed reforms.

Why take ye thought for the parcels post, the postal telegraph, and the long list of needed legislation? Seek ye first the initiative and the referendum and "all these things shall be added unto you."

The man to whom this world has ever been the most indebted is the agitator. He is the man who, all along the ages, has blazed the way for the onward march of civilization. While he lived he was ostracised, persecuted, banished, crucified; after his death, monuments were built to his memory.

The chief opposition to him has always come, not from the common people, who often heard him gladly, but from those high in civil or ecclesiastical authority, who feared that the new ideas would interfere with their prerogatives, or disturb the established order of things.

Exactly the same thing is true in our day, and our legislatures are used to defeat or retard the great reforms for which the world is ripe and waiting. The initiative and referendum will render legislative bodies powerless to obstruct human progress. The reformer will make his appeals directly to the people, who are to be the beneficiaries, and at the American ballot-box the principles which he lays down will be crystallized into law. And the reformer, for the first time in American history, will find roses instead of thorns strewn in his pathway, and will for the first time be appreciated by the generation in which he lives; and for the first time will the dream of Jefferson be realized, when "laws and institutions will keep pace with the progress of the human mind."

Direct legislation is a non-partisan issue, having received the sanction of men of every shade of political belief. It can be secured only by creating a public sentiment in its favor so strong that no party will dare to omit it from its platform.

The law providing for it should be in the form of an amendment to our State constitutions. And when it becomes a part of State constitutional law, a way can easily be found for introducing it into the United States Constitution.

Several of our sister States have already adopted it, and it is gradually being introduced into the charters of our great municipalities.

To the boodler, the machine politician, and the party boss, it is the handwriting on the wall, proclaiming their certain doom. But to the world it is the harbinger of a grander civilization.

AGRICULTURAL EDUCATION IN THE PUBLIC SCHOOLS.

By JOHN S. DORE, of Fresno.

The first public consideration and action by California farmers looking toward the teaching of scientific agriculture in the public schools of the State that has come to my notice was the introduction, discussion, and passage of the following resolution by the State Farmers' Institute held at Berkeley recently, and concerning which the San Francisco Chronicle editorially said:

> Want More Instruction.—The resolutions which the institute adopted this afternoon were hearty in their approval of the work of the agricultural college, earnest in the desire to have the work increased and properly supported, and urgent in their desire for the widening of the scope of agricultural instruction throughout the State. They were passed exactly as the committee had submitted them, as follows:
>
> Whereas, We consider nature study with special reference to agriculture of great value to all children of school age; and,
>
> Whereas, It is, in our judgment, imperative for the best good of the children that all the teachers in the public schools be qualified to present such truths in the best possible manner; therefore,
>
> *Resolved*, That we ask the Legislature to take immediate action requiring a thorough course of elementary training in agriculture as a prerequisite to graduation in all our several normal schools.

The State Farmers' Institute was the most notable and representative body of farmers I have ever seen assembled in California. The adoption of the above resolution was by the most hearty and vigorous vote given any of the several resolutions adopted by the institute.

The purpose of this paper is to call the attention of the fruit-growers and farmers of California, assembled in this their thirtieth annual convention, to the importance of this subject and desirability of proceeding in a logical and proper way to secure the desired results by first getting the needed legislation to include in the curriculum of all our normal schools so much of scientific agriculture as to qualify their graduates to properly teach this branch. When we have provided for properly qualified teachers, then we can give nature study with special reference to agriculture a legitimate standing in all our public schools. I would not increase the work of the pupils or teachers in our public schools, but would change from cramming the memory to cultivating the perceptive faculties of the children.

In support of this change I find many leading, thoughtful citizens and educators. I believe, as Mr. Berwick has told you from this platform to-day, that the greatest curse of the public school system of California is the shaping of the course of study from the primary school up through all grades to graduation from the high school, all with the special and sole purpose of preparation for entering the university. Mr. Berwick, himself a Greek and Latin scholar, told you this course of study was prepared in the interest of professors who had Greek and Latin to sell, and that the farmers and fruit-growers without protest allowed the great injustice to their sons and daughters to go on, while only three per cent of those who attended our public schools ever enter the university. He expressed deep regret for such time spent by himself as well as by the children of California, not wisely and without reference to the life work, the special preparation for which is so pressing in this strenuous age.

President Burk, of the San Francisco Normal School, in a gathering of teachers in that city recently, said he would cut out much from the courses of study in the schools in the endeavor to avoid the learning of matter which would be of no practical use in after life.

The National Grange of Patrons of Husbandry, an organization of upward of 700,000 farmers and farm laborers in this nation, has shown full appreciation of the importance of this subject. In his address of welcome to the National Grange in Portland, Or., a few days ago, Governor Chamberlain, of the State of Washington, called attention to the subject of agriculture in the public schools, as follows: "Greater attention ought to be paid in the public schools of the State to instruction along the line of field and farm. The trend of public thought is in this direction, but until concentrated effort is put behind it to force this thought to the front and cause it to be put into practical operation, not much can be expected at the hands of those in authority."

In the same line of thought Governor Batchelder, of New Hampshire, who by the way is Lecturer of the National Grange, in a lengthy report to the National Grange at its recent session in Oregon, said: "No feature of educational work in which the Grange can exert an influence is more promising than that of introducing the principles of agriculture in the curriculum of public schools. It is well for the mental development of the child that the origin, composition, and uses of the objects by the roadside between its home and the schoolhouse be understood, and far better for its success in life than to be taught the heights of mountains that will never be seen, or other intricate problems in the higher mathematics or the dead languages. Whatever the occupation or profession of the child in after life, it will be of advantage to him or her to know something about the common things of life with which he comes in contact every day. It will strengthen his interest in the soil and the occupations connected therewith. The State of Missouri has taken advance ground in this direction and provides means for the teachers of the public schools to equip themselves for imparting such instruction. It has become one of the requirements of a State teacher's certificate in that State."

He further says: "The Grange can and should lead in this important matter and require similar regulations in other States, and provide means for enforcing them. This is one of the leading educational issues of the present time and upon which important results depend."

Again, the National Grange says: "In view of the fact that agriculture is the great basic industry of the nation upon which all other professions depend, we reiterate our previous declarations in regard to teaching the principles of agriculture in public schools, believing it to be for the public welfare to have every boy and girl, whatever their life work may be, instructed in the underlying principles of that which constitutes the basis of all wealth and prosperity."

Dr. A. C. True, an educated gentleman who stands at the head of all the experiment stations of the National Government, is a practical and enthusiastic advocate of the teaching of agriculture in the public schools. Dr. True has written freely on this subject in Yearbooks of the Department of Agriculture for many years past, and I quote much from his writings.

"While there has undoubtedly been a generally increasing interest in public education in this country during the past quarter of a century, various causes have unfavorably affected the rural schools, so that their relative efficiency has notably decreased. Even in communities where educational activity has been relatively great some of these causes have operated to the disadvantage of the schools. There is no doubt that the average rural school of the Northeastern and Central States is as a rule an educational agency of considerably less merit than it was a generation ago. Then these schools were often numerously attended by boys and girls who, in many cases, continued in them until they were full-grown men and women. They were taught by the brightest minds in these communities—often in winter by college students and in summer by women from the academies. The range of studies, while narrow, was fundamental, and in that respect the country and city schools of that time were much alike. In a word, the country schools of that day were much more nearly sufficient for the educational needs of the times than those of to-day. The element of education which is at present most lacking in our common schools is the training of the powers of observation. The children need above all things else to be taught to observe carefully and correctly and to state their observations in clear and terse language. The ordinary child, whether on the farm or in the town, actually sees comparatively little in the world about him. The wonders of the trees and plants in park or meadow, of birds and insects flying about the house, float like shadowy visions before his eyes. 'Seeing, he sees not.' He needs a teacher who can open his eyes and fix his mind on the realities among which his daily life is passed. This accurate observation of natural objects and facts is the only foundation on which scientific attainments can rest. The scientist is chiefly a man who sees better than his fellowmen. But it is also a great help in practical life. Many farmers acquire much of this power by their own unaided efforts. And these are the very men who most regret that they did not have in early life the help of a trained teacher. The farmer's child lives where he has the best opportunity for such training. It would benefit him in the practice of his art, and it would add an interest to his life which would do much to wean him from a desire to leave the farm for the turmoil and uncertain struggles of the town. With proper provision for the training of teachers in normal and other schools, it would be entirely feasible to have this nature teaching in all our common schools within a few years. It is such teaching that the child-mind craves. With it the school becomes a delightful place and the teacher an angel of light. Is it not likely that a child who is thus taught will soon begin to see a new value and dignity in farm life and to be less envious of the boy or girl who is shut up within the narrow confines of city streets most of the year? And if the farmer's boy learns how to accurately observe the processes of nature with which farm practice deals and the foes with which agriculture has to contend, are not the chances vastly increased that he will be successful in managing nature so as to get the greatest favors from this coy mistress of his life and fortune?"

The United States Commissioner of Education, in his last official report, shows 16,930,061 young persons enrolled in the public schools of the nation—fully twenty per cent of our entire population.

If agriculture could be generally taught in the schools it is obvious that the effect would be widespread and far-reaching. One effect of this would be to open the mind of the pupil to the wonderful progress which is being made in agricultural science and practice. It would enable him to take more thorough advantage of the information furnished through books, bulletins of experiment stations, farmers' institutes, the agricultural press, and the many scientific discoveries relating to the varied industries of the farm which now find a place in many of our leading magazines. It will come, too, at a time in his life when he is making choice of his life occupation, and it is believed it will be a powerful incentive to keep those boys on the farm who are fitted to get the most in every way out of a farmer's life, and at the same time to become the most useful citizen.

This would bring agriculture well into line with the great commercial and manufacturing enterprises of our day, which owe so much to technical education.

One result of our school life to-day seems to be a distaste, if not disgust, for honest toil and an effort to escape the only way by which happiness and usefulness in this world can be had.

In this connection I have great interest in Booker T. Washington's school. A clipping from a recent publication says: "The Tuskegee Institute is the most useful educational institution in America, because it teaches that which is the best practice for all to the very people who not only most need such teaching but are best situated to profit by it. It has turned out during its twenty-three years more than six thousand men and women fitted for honorable and remunerative employments. All its graduates are in demand before they graduate. Just now it is doing a more necessary work than any other educational institution in the world. It is doing more than any other human agency to solve the race problem of the South."

We do not ask for any neglect of the general education of the pupil while receiving instruction in agriculture and other industrial studies, nor do we complain because mechanical and manufacturing interests have been pretty well cared for and fostered, especially in the manufacturing centers of our country, realizing and believing as we do that the only opportunity the boy or young man of the future will have to obtain technical instruction must be in some kind of public school, for even to-day there is little chance for the American boy to learn any trade of his choice without consent of those who believe their craft would be injured by addition to their numbers; but we do urge and insist that agriculture shall at least be placed upon an equality with other industrial instruction in the public schools, which it has not up to the present time.

Superintendent Langdon of San Francisco has just returned from an extensive tour of the Eastern States and Canada. He was granted a leave of absence by the Board of Education to learn what was being done in other cities in educational matters. He reported that he was struck with what is being done in the important centers of the nation in the way of industrial education in every form in the great manufacturing districts—even to the kindergartens for the youngest children in factory neighborhoods. One of the most marked movements in modern education noticed at once by Superintendent Langdon was the rapid introduction of industrial education in all its varied forms. The greatness of American industry which he saw so clearly shown at the Louisiana exhibit was quite as clearly reflected, he says, in the educational exhibits showing the work of our public schools, the schools of the Eastern States in particular. Germany, which has in the last few years tried to wrest commercial supremacy from America by the widespread introduction of industrial work in the folk schools, is being checkmated, for America is slowly but certainly paralleling the European method of providing school training in the manual arts, so as to maintain her present lead. The result of all this industrial education has helped the manufacturing interests to far outstrip agriculture, which has benefited very little, if any, up to the present time by agricultural instruction in the public schools. The Census Reports show this clearly, as follows: Manufacturers have ten billions of capital invested and they put out thirteen billions' worth of productions; farmers have twenty billions of capital, and raise five billion dollars' worth of products. In other words, the dollar of the manufacturer yields him $1.30, while the dollar of the farmer yields him only twenty-five cents. These figures are taken from the 1900 United States Census Report.

Dr. True was sent to Fresno some two years ago by Secretary of Agriculture James Wilson, to investigate and report upon the urgency and need of investigation by the United States Government in relation to the rise of the ground water and alkali in that vicinity, and while there he visited the high school, and in the Yearbook of 1902 writes of that visit, as follows:

"The writer went not long ago to a flourishing agricultural community, in the midst of which was a fine and wealthy city. On invitation of leading citizens he went to the splendid high-school building in that city and addressed the teachers and students. In that school were gathered some six hundred active and intelligent American boys and girls. They were pursuing courses in English and other languages, mathematics, history, political economy, and a number of natural sciences. With much justifiable pride the principal showed his visitor the good equipment for work in carpentry and woodcarving. There was also instruction in various forms of commercial business. But agriculture and horticulture were entirely neglected. The farms and horticultural plantations surrounding that city aggregated millions of dollars in value. The prosperity, if not the very existence, of the city depended on the success of the agriculture in its vicinity. Grave evils afflicted that agricultural region, the removal of which will require much intelligence and expert skill. Hundreds of the pupils attending that high school would naturally, if not necessarily, make agriculture in that region the business of their lives. And yet no pupil of that school was learning anything about the requirements of successful agriculture or the aid which science may give the farmer in his struggle with the forces of nature vitally affecting his business. The whole drift of the education given in that school was away from the farm. Could anything be more unwise? Is it not absolutely certain that, considered merely as a matter of business policy, the taxpayers of that city could well afford to pay all the additional expense which would be required to maintain courses in agriculture in that school? Undoubtedly the farmers of the vicinity ought to share in this expense, and there is good reason to expect they would do so. There are hundreds of American communities where a similar state of things exists. It is not a matter of interest and concern to the farmers alone. The enduring prosperity of cities is inextricably bound up with the success of agriculture. Technical education has proved a sure road to commercial development and greatly increased wealth in connection with every industry which has received its benefits. It will prove equally so as regards agriculture. The tremendously productive results which have already come from the work of the agricultural colleges and experiment stations may be multiplied a hundredfold by the education of hundreds of thousands of the flower of rural youth in secondary schools in which there is definite and systematic teaching of the technique and scientific principles of agriculture."

THE FRUIT-GROWER AND THE PARCELS POST.

By EDWARD BERWICK, of Pacific Grove.

The first time I met with the fruit-growers of California in this city, Mr. Gordon read a paper of very pertinent counsel to all intending planters of prune trees. He proffered them Punch's advice to persons about to marry, viz., "Don't." He foresaw the impending glut which we all so much deplore, yet seem so helpless to relieve.

I remember rising to suggest that it was simply a matter of transportation. Given adequate transportation at rates approaching the cost of service, and not based on the exaction of "all the traffic will bear," and I believe even to-day there neither need be, nor ought to be, any glut in the prune, raisin, or citrus fruit markets. It is absurd to think that with proper distribution, at proper prices, this country alone could not and would not consume two pounds of prunes and one and a half pounds of raisins for each head of population.

Why, just recently when it suited a Sacramento and San Francisco dry-goods house to advertise, in a novel manner, their own wares, and incidentally to benefit the raisin-grower, that house sold in one week 35,000 pounds of raisins in Sacramento city alone. That was one pound in one week for every man, woman, and child in that city, or at a rate of 1,820,000 pounds a year. In San Francisco the same firm sold 130,000 pounds of prunes in ten days, or at a rate of 4,680,000 pounds or 2,340 tons per annum. If this could be done in two cities of California in the very heart of the fruit-growing season, with the markets supplied with an endless variety of fresh fruits, what might not be anticipated in cities where fresh fruits are comparatively rare, and at times of the year when the supply is confined to comparatively few varieties?

How was it done? It was done by letting the public know that these valuable and acceptable articles of food were on sale at comparatively a small margin over the cost of production.

Why was it done? It was done in part, perhaps, from the innate goodness of heart of Weinstock, Lubin & Co.; but, also, it was no doubt done as a "flyer," to draw customers to buy other goods by offering prunes and raisins at close figures. The sale was a positive attraction.

It not only sold the dried fruit, but brought to the store new buyers of other goods.

If one or two merchants can arrange thus to push the sale of the fruit-grower's products, is it possible, or impossible, for the grower to undertake to push the sale of his own products in a similar way? Is there no agency he can devise by which he may convey his goods direct to customers, at something like such living profit to himself as shall enable him to remain in business, and induce the consumer largely to increase consumption by the cheapness of the product?

When Mr. Gordon predicted this impending glut of prunes, I recommended the isthmian canal as a vehicle for the cheap transport of products to Eastern and European markets, and for many years thereafter it was my privilege to be one of your Isthmian Canal Committee. By many, then, the isthmian canal was regarded as an iridescent dream. Now I am glad to say that in this capacity of committee-man my occupation is gone, as the canal is being rapidly realized. But in May, of last year, at Los Angeles, the horticulturists of California commissioned me, as President of the California Postal Progress League, to work with and for them in behalf of a parcels post, an institution that, pending construction of the Panama Canal, and long after its construction, would be an exceedingly efficient agency in the distribution of your products, and be useful not only to you but to the whole community, "an inestimable boon to all classes and an incalculable stimulus to trade."

You heard last year at Fresno, and it has been reiterated repeatedly in the press, what other countries have accomplished in transporting goods through the postoffice, or by special agricultural parcels post by railroads, at exceedingly small rates, say from two fifths of a cent to two cents a pound. You were shown that the American express companies have established for the British public a flat, or postage-stamp, rate of 24 cents on 11-pound parcels, anywhere between New York and San Francisco, or other express offices in the Union. The proof of this I have already forwarded to President Roosevelt and will speak later of the result.

To show the extent to which the parcels post system may be availed of, let me mention that one firm in England, in two days, sent off 70,000 parcels, paying therefor postage amounting to £875, or $4,300. Supposing these parcels were of ten pounds weight each, we have 700,000 pounds, or 350 tons, or 35 ten-ton carloads. You can see, therefore, that very few prune- or raisin-growers are in so large a way of business that the parcels post might not prove an adequate channel for the marketing of their wares by putting them in direct touch with the consumer. This, of course, means the delivery of an invaluable, health-giving dried fruit, direct to families, at such low prices as would stimulate consumption, and yet amply remunerate the grower. In this connection the recent development of the rural parcels post in England merits a moment's attention. Mark its availability for all classes of produce and producers.

According to the London Daily Mail, "It will now be possible for those who live in places quite remote from postoffices, to hand parcels to the postman for transmission through the mails. A rural postman, whether on foot or mounted on a bicycle or tricycle, is to accept parcels tendered to him, provided that he is not already fully loaded, and that the weight of the parcels handed by any one person does not exceed eleven pounds. If the sender's consignment is likely to exceed this limit, arrangements will be made for its collection, if a day's notice is given. If the postman uses a horse and cart, he will be allowed to receive any number of parcels, provided he can conveniently carry them in his vehicle. When these conditions do not apply, the sender has yet another opportunity, for he has only to proceed to the nearest country letter-box at the time appointed for emptying it, and the parcels may then be handed over to the driver of the mail cart, who, however, is not required to weigh the parcels or to check the postage. For the accommodation of farmers, market gardeners, and those who are in the habit of regularly dispatching goods by parcels post, special arrangements have been made, and, in cases where a sufficient number of parcels are regularly sent, there will be, if desired, a direct collection from the premises every week day or on certain specified days each week." Obviously these provisions cover shipments of ten pounds or ten tons. Equally obviously such arrangements are of untold convenience to all classes.

Presumably no one here doubts the immense advantage such a parcels post would be to the people of this great republic. Presumably no one doubts the ability of the American government to give as good a public service to its citizens as the German, Swiss, or British governments give to their citizens. Why, then, have we no parcels post? If I may be permitted to quote Scripture, I should say, "Ye have not, because ye ask not!" "Ask and ye shall receive!" But you must "ask in faith, nothing doubting," and lastly, you must "show your faith by your works," for "faith without works is dead."

Are you willing to ask in this way, determined to work for what you want; determined to get what you work for? You are entitled as American citizens to dictate rather than ask, for ours is a government not only "for" but "by" the people.

The California Postal Progress League was formed as a rallying point for workers on these lines. Have you done your share in the rally? Do you know how you want your servants to serve you, and are you prepared to do your share in directing your public service? The League has undertaken a campaign of education. It has enlisted part of the

Press to inform people of the plain postal facts, such facts as this: that while it is claimed by ex-Auditor Castle that the transport of all mails costs the United States government $7\frac{9}{10}$ cents per pound, the American express companies carry for the British government, between New York and any point in the Union, at a flat rate of $2\frac{1}{11}$ cents per pound; that while the British postoffice carries from Ireland to India eleven pounds for 72 cents, we pay a flat rate of 64 cents for four pounds from San Francisco to Oakland, or San Francisco to Boston.

The League has not only appealed through the press, and by distributing thousands of circulars, to the people at large, but it has corresponded with the leaders of both parties, with President Roosevelt, Senators Root and Cabot Lodge, W. J. Bryan, Thomas Watson, and others. It has, through the efficient work of Mr. Raap, Worthy Master of the State Grange, and Mr. J. S. Dore of Fresno, interested the National Grange to work in favor of the parcels post. It has endeavored to convince platform committees of different political parties that if they really wished to do something for the benefit of the people it would be good to embody a parcels-post plank in their platforms. It has held a notable public meeting at the Alhambra Theater in San Francisco, which, through the publicity given the cause in the metropolitan dailies, challenged the attention of all California. It has interested the youth of California by addresses given in the normal and high schools and universities of the State at Berkeley, Stanford, the Lick, Lowell, Wilmerding, Mission High (in San Francisco), San José, Fresno, Lompoc, Lakeport, Arroyo Grande, Pacific Grove, and elsewhere. It has so persistently corresponded with President Roosevelt and the Postal Department setting forth the iniquity of the "free pass" and "frank" system, by which our Senators and Congressmen are placed under such obligations to the great transportation corporations as to preclude them from giving proper attention to the well-being of their real employers, the PEOPLE, that the President has ordered a secret investigation. Here is the announcement thereof, clipped from the San Francisco Chronicle:

> NEW YORK, November 10.—A special to the Herald from Washington says: A new investigation of the Postoffice Department is now under way, and is directed against the railway mail service. Half a dozen railway mail contracts are now before the Department of Justice for examination as to their legality, and investigation of charges of collusion by Government officials, some of whom are supposed to be in Congress.
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> President Roosevelt ordered this investigation before the death of Postmaster-General Payne, but the fact that an inquiry has been going on for nearly two months did not become known until to-day. In ordering the railway mail contracts to be examined secretly, the President has stolen a march on the members of Congress who have always protested against such an investigation on behalf of the railroads.
>
> One reform likely to follow in this Department, applies to the method of weighing the mails on which to base the price to be paid to the railroads. This is done once in four years for a short time, and on this basis a four years' contract is made. It has been charged that the mails were increased during these periods by collusion between the Postoffice officials and the railroad companies.

This investigation was set on foot subsequent to charges of corruption made by the League to President Roosevelt, so that already the League's work has borne fruit.

A parcels post has been inaugurated with China and Japan, and it is said that arrangements are almost completed for conventions with England and Belgium. It is also alleged that Assistant Postmaster-General Madden contemplates a fusion of third- and fourth-class matter into one class at one cent for two ounces for all merchandise. This cuts the present rate in half, and is at least a move in the right direction. The League has done all this with very inadequate support. Its funds have not sufficed to pay its outlay for printing, postage and traveling, and that connected with its public meeting in San Francisco. When I last heard from the treasurer the League was in debt. The League has had no funds even to employ a salaried secretary. While the Anti-Parcels Post League has an organ of its own, the "Pacific Coast Merchant," the Postal Progress League has to trust to the sympathies of such editors as are clear-sighted and patriotic enough to work for this great public benefit. Speaking on this topic, I must do the Anti-Parcels Post League the justice of saying that they have lately opened the columns of the "Merchant" to a fair discussion of the pros and cons of the parcels post system, their president stating their side in one issue, our view appearing in the next.

Probably both political parties would have adopted parcels post in their platforms in this State but for the ill-advised opposition of some few misguided Santa Cruz retail merchants, who had been persuaded that our League was a creature of the Eastern mail-order houses. Traveling last week with a San Francisco jobber of dry-goods there was temptation to laugh in one's sleeve to hear him denounce the parcels post because it would so greatly help these very country merchants, and, as he thought, at his expense. It has been found wherever introduced a universal benefit. No one class holds any monopoly of its beneficence

Every step in human progress has always met with bitter opposition from some ignorant minority. How long it will take to remove this opposition depends upon how much work you and I, brother fruit-grower, are willing to do toward this removal. Do you ask, What can you do? You can give the League your influence; the weight of your name; the benefit of your dollar to its funds. You can, if you will, easily do a great deal more; you can interest and instruct your neighbors so that they also may go and do likewise; you can circulate petitions to Congress, and personally write to your Congressman, who will be in Washington on purpose to give effect to your wishes. You can prove your title to your proud boast of American citizenship by giving your brain power to make and keep this a government of the people, for the people, and by the people.

What are you going to do about it? What? Why, of course, you are going vigorously to help this movement, knowing that Heaven helps those who help themselves. And, as you are going to help the Postal Progress League, don't put it off till to-morrow. Help us now!

PRESIDENT COOPER. The essays that you have heard read are now before the convention.

MR. KELLOGG. My good friend, brother Berwick, referred to my address, and I wish to say there is no controversy whatever between me and Mr. Berwick on all these lines. But I want to make a suggestion or two. Mr. Berwick is wrong in one assertion that he has made when he says that we are a government of the people and by the people and for the people. That is not correct. We have three departments of our Government—the executive, the judicial, and the legislative. We are a government by the legislature, for the legislature, and of the legislature. We have no power by which to compel these legislators to enact the laws that we ask for.

MR. BERWICK. I take Abraham Lincoln's word for it.

MR. KELLOGG. I know that Lincoln said that; and he was a man of democratic ideas in his time. But it has changed from the government of his time, from pure democracy to a representative legislative government; without safeguarding it with the initiative and referendum, it ceases to be in fact a government of the people, for the people, and by the people. Without it we can petition for this parcels post for years; our legislators may be offered bribes by Wells, Fargo & Co. to prevent the parcels post. They have got money to fight with. Again, how are you going to introduce parcels post without introducing some other things. The railroads for years have charged the Government much more for transporting its parcels than it has for transporting those of the express companies. Now in all municipalities and cities the authorities say what prices shall be charged for certain services rendered by the corporations. For example, the city of Santa Barbara has a wharf, and the city council decided that certain rates should be charged on freight shipments. The Government of the United States should decide what the railroads should charge for the transportation of its packages and parcels. There are other things that must come along with the parcels post, and the foundation of all is direct legislation.

MR. BERWICK. I am willing to admit that a great deal which Mr. Kellogg says is correct; but when I want to do some work, I do not wait for a machine to be introduced. I use the machine already existing. I try to make that do the work I want done. I am quite willing that the referendum and initiative should be introduced along with the other things, but until it does come along I will try to use the best tools that I can get until I have better ones. There are plenty of men left in the world to go to Washington to do the people's bidding when they are sent for. We send men there frequently who are the creatures of corporations. But if you express your wishes directly to your Congressman I am sure—I am sure Mr. Hayes for one will do your bidding, regardless of the corporations. I am sure in every part of this State and Union, if the people themselves say what they want done, and say it as though they meant it, the people in Washington will do it.

I sometimes think of a little occurrence at the Stanford University when I first went there. I never had heard a college yell before. When I was eating my lunch I heard something like this: "We want our pudding!" The boys got their pudding. If you say that in that same way, that hearty way, "We want the parcels post," say it altogether, they will hear it in Washington and they will give you the parcels post.

MR. JUDD. I thoroughly indorse what Mr. Berwick has said as an educational measure, but I don't know that we have any means now of enforcing our wishes in this matter—absolutely no means. I want to call attention to another matter, and that is we want the direct election of United States Senators. Have we got it? No, sir. And it may be a quarter of a century before we have it. If we had power to enforce it we would get it at once.

MR. BERWICK. My college yell seems to be questioned, whether it would be effective or not. As a college professor I do not highly approve of it. But I have heard of a process called hazing; that might be effective with regard to this question, possibly.

MR. WORTHEN. Where did this movement originate, and how long has it been agitated in this country?

MR. BERWICK. As far as my personal knowledge goes, it began in Los Angeles in May of last year. I read a paper there which was entitled "The Fruit-Growers' Wants and Desires." We held a meeting subsequently and organized the "Postal Progress League of California." Mr. Dore of Fresno was secretary, and they insisted on making me the president. I have spent a good deal of my own money and incurred a great deal of odium, particularly in San Francisco. Some persons there don't want it. They say it would hurt the country merchants. That is the excuse they make. I have tried to show them that it would not hurt the country merchant; that it would benefit him. I wrote to a friend in Europe to ask what the effect upon the country retail merchant was, and he wrote me that if it were abolished it would be a great loss to us; he did three times the business on the same old capital. As I told you in my paper to-day, and the jobber of San Francisco, it would help retail merchants in the country, but it might hurt somebody sometimes; but ultimately it benefits the whole country, and particularly the fruit-growers, and they are a large part of the country here. It would tend to make the whole country prosperous.

I told them this for one thing. I said to them that they speak about sending goods from Chicago here at a small rate, ruining the retailer's business. In San Francisco to-day the principal stores are sending goods out a hundred miles actually free of all transportation charge. San José to-day is a better city; it has better stores than ever before in its history. If free delivery from San Francisco to San José does not hurt San José, surely a two-cent delivery will not hurt San José. If you want a hundred pounds of stuff from Chicago, you can get a rate of $2.60 per hundred by freight. If you want only eleven pounds you have to pay for a hundred pounds. Supposing I want to send to Chicago for eleven pounds. It can not be sent by mail; they do not admit more than four pounds by mail. By express it would be exceedingly costly from Chicago. The cost of eleven pounds from Chicago, or from the Pacific Coast to New York, would be $2.35. For $2.60 I can get a hundred pounds sent from Chicago here. What do I do? I look over the catalogue and I find eight more articles that I want that can be shipped, and instead of one article I have sent nine articles, making ninety-nine pounds, at the same cost. Is not that obvious?

The express companies have arranged to carry for the British public between New York and California, at the rate of $2\frac{2}{11}$ cents a pound. They are carrying for the British public to-day at that rate.

QUESTION (by a member). What is the postal rate for a four-pound package from New York to San Francisco?

MR. BERWICK. Sixty-four cents. And they are carrying for the British people eleven pounds for $2\frac{2}{11}$ cents per pound. The express companies must be making a profit at that figure. If they can do that for the British public, surely they can carry it for the American people for as little as they can for the British. The express companies carry from Great Britain to New York for 72 cents, across the Atlantic, and the same package from New York to San Francisco for 24 cents additional.

MR. BOOTH. Mr. Chairman, I wish to say a few words and give you a little experience of my own. I had a German working for me who wanted to send to Berlin, Germany, for a rifle. It weighed about eleven pounds. They brought that rifle from Berlin to Sacramento for 50 cents, for I received it from the office and paid the charges myself. At the same time, to satisfy myself, I sent to John Wanamaker for a parcels post package to weigh as nearly eleven pounds as possible, and they charged me $2.68 for carrying it from New York to Florin.

PROF. FOWLER. I want to say just a few words on this subject from personal observation. Following out what Mr. Berwick has said with reference to the cost and this convention with the British government, I lately had a parcels post sent from Manchester, England, weighing eleven pounds, to me at my home in Oakland. It was delivered to my house by Wells, Fargo & Co.'s express. I happened to live just outside of what we call the dead line. In other words, they do not deliver free of charge outside of certain lines. They usually send me a postal notice to call for my express packages, but in this case they delivered to my house. It cost me $1.24. It was for the interest of the British citizen, not in the interest of the American citizen. We are paying the express companies for the privilege of carrying our own express a higher rate than they charge the British people. Are they doing it for nothing? No, sir; they are doing it for a profit. It all comes down to just exactly this question of the parcels post, the question we ask here. When the parcels post was first advocated I remember that John Wanamaker was in the cabinet as Postmaster-General under Harrison's administration. He had a bill introduced. That bill was put into a pigeon hole, and it is in there yet. John Brisbane Walker asked the reasons why it could not be passed. Mr. Wanamaker said it could not be passed for four reasons. What are they? Well, first the Adams Express Company; second, the Southern Express Company; third, the American Express Company, and fourth, Wells-Fargo Express Company. These are the reasons why that bill could not pass through the American legislature.

MR. HARTRANFT. I know that Mr. Berwick has been doing a good work in this line of the parcels post, and it was through his efforts that one of the most dangerous men to the interests of the parcels post was prevented from going to Rome to the International Postal Congress. I also know that the Postoffice Department has been forced into a corner and has put itself on record in one of the most untenable positions that it could be expected to hold. The Postoffice Department, in answer to Mr. Berwick, has referred him to the fact that the express companies would give private rates to large shippers of commodities. In other words, our Government tells us—our Postoffice Department writes to us here in California—that that most vicious practice, the giving of rebates, is advisable and available to us. Now the parcels post will bring us a uniform flat rate. And the Postoffice Department is offering, suggesting, and recommending the irregularity, the necessity of the secret rebate proposition which the express companies offer. The parcels post insures us an equitable and just rate.

MR. WORTHEN. I am much encouraged by what has been said here to-day regarding the parcels post. The National Grange has been advocating this matter of parcels delivery, and I know when I was in the State Grange I advocated this, and every State Grange in the United States during the past year has passed resolutions favoring this measure, along with other measures for which they have been working for the last ten or fifteen years. And some of them are about accomplished. They will continue to work for all these measures until they have succeeded. I was glad when I took up the Grange bulletin to find Mr. Berwick's article in it, and I thought we were having help in California. I was called upon some weeks ago to write to members of the National Grange in this State to pass resolutions favoring this project—to favor those resolutions. I was glad to see that they were all aware how important this subject is. You may rest assured that the Patrons of Husbandry will continue to work for this measure in the same way.

MR. BERWICK. Sometimes I am proud to be an American citizen, but I do not like to be held up at every turn by my own Government. It does not please me when I find the railroads are carrying for the British public at one fourth the rates they are for us. It looks to me exceedingly like what, in plain words, we would call highway robbery. You can say what you like, the thing is being done to-day. There is no mistake regarding it. They actually carry for the British public for two and a fraction cents per pound from New York to any point in the United States. If they can carry for the British for that price they certainly can for us. I dislike exceedingly in being held up at every turn on behalf of my own Government. It is not right. I want to kick myself because I am the people, as I was telling you. We should all realize that we are the people. It is of no use to blame Mr. Roosevelt or any one else. Blame yourselves. It is because you do not do your part in the government of the people and by the people. This would be very soon established if you did your share in the government by the people.

PRESIDENT COOPER. I will now announce the Committee on Resolutions, as follows: John Markley, John S. Dore, B. F. Walton, Edward Berwick, and A. N. Judd.

A recess was then taken until 9:30 o'clock to-morrow morning.

PROCEEDINGS OF SECOND DAY.

WEDNESDAY, December 7, 1904.

The Convention was called to order at 9:30 A. M. President Cooper in the chair.

PRESIDENT COOPER. A gentleman in the audience moves that a vote of thanks be extended to the ladies of the San José Grange for the splendid reception tendered to us last night by them. I declare the motion carried.

We will now hear the report of Mr. Alden Anderson, manager of the California Fruit Distributors.

REPORT OF THE CALIFORNIA FRUIT DISTRIBUTORS.

BY HON. ALDEN ANDERSON, MANAGER.

Mr. President: It is with more than ordinary pleasure that I furnish at the request of the President of this Convention, a statement of Eastern deciduous fruit shipments from California as compiled by the California Fruit Distributors, for the season of 1904.

This feeling arises, first, from the fact that I was out of the State at the time of the holding of the last convention, and was denied the pleasure of attending in person; secondly, because of the fact that there have been some criticisms made, mostly by insinuation, of the organization of which I have been manager, by those not affiliating with or doing business in any way with the same, which were wholly uncalled for. So far as I know, there has been no complaint whatever on the part of any grower, coöperative association, or shipper affiliating with or doing business through the company, on any matter involving a question of honesty of purpose or of detail of management. Therefore, in presenting this report in person, I reiterate all that has been heretofore declared as to its purposes and procedure, and challenge any one to deny the truth of any assertion made in connection therewith. I reiterate what I have stated frankly in former reports, that the association is not connected with and has no arrangement with any transportation or refrigerator company, or with any box factory or paper company; that it does not purchase fruit in any way, shape, or manner, but is a clearing-house for the shipments of associations or shippers affiliating and shipping through it, with the sole aim and object of giving their products an even, careful, and wider distribution to the different markets throughout the country; and also endeavors to secure a fair degree of remuneration for their products. It has not sought by argument or coercion to add to its strength, and all its members affiliate voluntarily.

Regarding the past season and the shipment of fresh deciduous fruits, I regret to say that it has not been a propitious one, principally because of adverse climatic conditions. At the time of the blossoming of the trees, we had continuous and heavy rains which washed the pollen from the bloom and prevented fertilization, with the result that fruit did not set well, and in many of the heavy shipping districts there was the lightest general crop ever had; while in others, some varieties were full and other varieties were a complete failure. This lack of variety of assortment made it difficult to supply and control markets that had heretofore looked almost wholly to California for their supplies. This was particularly true of peaches, there being shipped this year only 559 cars as against 1,867 cars last year.

Peaches.—The quality of the peaches that were shipped this year was not up to the usual standard, and the consequence was that many patrons turned their attention to the peach-growing districts in the South for their supplies, and the scarcity of peaches here for shipment resulted also in a curtailed outlet in outside markets for other varieties of fruit that would have gone in the cars, of which peaches would have been the chief assortment.

Cherries.—The crop of cherries was practically about the same as that of last year. When the season was well under way, a very heavy north wind bruised the fruit remaining on the trees, so that the rest of the shipments did not realize the prices that the market conditions and the quantity of supplies would have justified.

Apricots.—Owing to the marked shortage of this variety of fruit in the early shipping districts, there were only shipped 97 cars as against 241 cars last year. Prices were satisfactory for those shipped.

Plums and Prunes.—There were shipped 1,053 cars as against 1,145 cars last year. On the whole, returns for this variety of fruit were satisfactory.

Pears.—The total number of cars shipped was considerably in excess of that of last season, and the excess was wholly in Bartlett pears, fall and winter varieties being about the same quantity as last year. There was more competition in this variety of fruit than has been the case for a number of years, and the bulk of it was shipped at a time when there were heavy supplies of Southern fruits. The markets became demoralized, and returns generally were not good or satisfactory. However, the greater quantity of this fruit was purchased by shippers and the loss did not fall upon the growers.

Grapes.—There were shipped 1,451 cars of grapes as against 1,804 cars last season. The unusual and excessive rains of September were responsible for a shrinkage of 800 or 900 cars in the total volume of grape shipments that would have been made, and seriously affected the prices received for all the grapes shipped after the heavy storms, as the berries absorbed so much moisture that when they were packed in cars for shipment they developed much decay.

The following statement of shipments beginning May 13 and ending November 26, 1904, gives in actual figures some ninety per cent of the shipments, and estimates of the balance, as gathered for statistical purposes by this company, and same is correct within a very few carloads of all varieties:

Cherries	209	cars
Apricots	97	"
Peaches	559	"
Plums and Prunes	1,053	"
Pears	2,186	"
Apples (all shipments not included)	43	"
Figs, Nectarines, Quinces, etc.	28	"
Grapes	1,451	"
Total	5,626	"

Railroad Time.—The time given by the transportation companies up to the point where happened unusual and bad washouts on the southern routes, and occurred the excursions of the Knights Templar and Odd Fellows to San Francisco, was better than last season. After the incidents above mentioned, service was about on a par with that of last season.

This year only five cities were added to the list of carload distributing points, and no greater progress was made in that direction on account of lack of variety of assortment for the loading of suitable cars for the smaller cities.

MR. ANDERSON. I would state that this is the report of the California Fruit Distributors, which has been asked for by the President. I presume it was asked for because it is the only firm in the State which compiles figures, or attempts to do so, regarding fresh deciduous fruit shipments.

PRESIDENT COOPER. Next will be heard the report of the Committee on Transportation, by Mr. Stephens, chairman.

REPORT OF THE FRUIT-GROWERS' COMMITTEE ON TRANSPORTATION.

MR. STEPHENS. I will state, before I read the report, that the committee stands as it did last year, so far as membership is concerned. Upon this committee is Mr. Alexander Gordon, Mr. A. N. Judd, Mr. Alden

Anderson, and Mr. A. H. Naftzger. Drafts of this report were sent to all the gentlemen on Friday last. The outline of the report was not made until then and was sent out at the earliest possible time. It was announced that a meeting would be held at the Palace Hotel in San Francisco on Monday last, any time before two or three o'clock. Then the members were notified that, if they desired, an opportunity would be given here in this city to hear suggestions concerning this report. Therefore, this report represents the sentiments and opinions and ideas of a majority of the members of the committee. Mr. Anderson did not report, nor did Mr. Naftzger. The reasons why, probably, are better understood by those gentlemen than by myself.

To the Honorable Chairman and Members of the Fruit-Growers' Convention:

Your Committee on Transportation begs leave to submit the following report:

We, the undersigned, members of the Fruit-Growers' Transportation Committee, believe the private ownership and control of refrigerator cars used for shipment of California fruit to be inimical to the interests of the fruit-growers and shippers, as affording an opportunity for discrimination and favoritism.

All cars and other transportation facilities should be owned and controlled in every particular by the railroads, and all shippers should have equal facilities and be upon equal terms.

We, therefore, in this public way, record our earnest protest against the renewal or extension of existing contracts with the refrigerator car lines now engaged in this traffic, or the making of any similar contracts with any parties whatsoever.

We make further objection to the private ownership and control of these refrigerator cars, as having the effect to maintain excessive refrigeration rates.

The fruit-growers, those who are not engaged in the shipping and marketing business, are irrevocably opposed to the private ownership and control of the cars in which their products are shipped. They believe the time has come when they should be relieved from paying heavy tribute to this, the worst of all monopolies. The power of such a monopoly is so great as to subordinate all other interests connected with fruit-growing in California, and such that it can at will control the distribution and marketing of a very large percentage of our fruits sold in Eastern markets.

Unless the fruit-growers organize for the purpose of using, and with the full determination to use, all means within their power to bring the necessary relief, they can not successfully counteract the influences of any evils that may have been, or may be inflicted upon the fruit-growers and people of the State by such a monopoly.

Refrigeration has been the bane of the fruit-growers of California. It has done more to retard the progress and prosperity of this State than all other things combined, for the reason that it possesses the power to almost wholly, if not quite, control the marketing of its fruit products.

Profit for fruit transportation should all be included in the freight charges alone, and such charges should be reduced to the minimum, so that no favoritism could possibly be shown to any, thus placing all interested upon an equality.

In regard to the time occupied in the transportation and delivery of our fruit to Eastern destinations, we reiterate all that we said in our memorial upon this subject for the season of 1901, and earnestly pray that the time agreed upon in May of that year between the growers and the railroad companies, six days to Chicago and similar points, and nine days to New York and similar points, be put into full force for the coming season—1905.

The Southern Pacific Company then, through its proper department, informed the fruit-growers of the State that it had arranged with its connections for a time-schedule on deciduous fruit from northern California, as follows:

By the Southern Pacific to Ogden, 60 hours; by the Union Pacific and its connections, 84 hours to Chicago, of which 24 hours would be consumed from Council Bluffs to Chicago; a total of 144 hours, or six days.

East of Chicago, the time would be about 60 hours; the trains would leave Chicago in the afternoon of the day of their arrival there, and arrive in New York on or about 4:30 A. M., third morning, thus giving a nine days' service to New York and like destinations.

Like assurances have been given every subsequent season, although in not quite so formal a manner, but never carried out, with few exceptions, yet sufficient to show that it is within the ability of the transportation companies to make the time promised and agreed upon between them and the fruit-growers in 1901.

Now, it frequently happens, that cars are out from fourteen to sixteen days, sometimes more, before being sold in New York and like destinations.

Give to the fruit industry of California such a service, and eliminate the private car lines, the thing which is paramount to all other things that can be done, and you will promote the interests, not only of the fruit-growers, but also of the State.

The adoption of a reasonably fast regular time-schedule service in the transportation of our fresh fruit shipments is second only to the elimination of all private car lines from the business.

We favor—

1. The application of the provisions of the Interstate Commerce Act to "all transportation of interstate commerce over any or all lines of railroad," and their connections.

2. The establishment of a court of interstate commerce, clothed with powers to enforce summarily the orders of the Interstate Commerce Commission, and the laws forbidding carriers or shippers to give or receive rebates, concessions, or discriminations. Such court is to concern itself solely with interstate commerce cases, and shall have power to enforce its orders by writ of injunction, attachment, or other process. It may act upon the application of the Interstate Commerce Commission, or any aggrieved person, and may punish violation of its orders as contempt of court by a fine of not more than $5,000 or imprisonment for not more than one year.

3. That when the Interstate Commerce Commission decides that a rate is unjust, "it shall be the duty of the Commission, and it is hereby authorized and empowered, to fix a rate in lieu of the rate that has been found unreasonable and unjust."

4. That "every order issued by the Interstate Commerce Commission shall become effective and be obeyed by the carrier or carriers on and after the dates specified for compliance in such order." That if the carrier appeals to the interstate commerce court from such order, it shall be enforced pending the hearing of the appeal, unless, in the opinion of the court, the order is clearly unjust, when it may be suspended. Also, that when an appeal is made from the interstate commerce court, to the Supreme Court of the United States (which may be made upon constitutional grounds alone), "during the pendency of any appeal, neither the order of said court nor the execution of any writ or process shall be stayed or suspended."

And that this proposed legislation covers private as well as all other car lines.

Adopted by the following vote:

ALEX. GORDON,
A. N. JUDD.
R. D. STEPHENS,
Members of the Committee on Transportation.

MR. ANDERSON. I would like to ask who had the appointment of this Committee on Transportation? At the time of the last Convention I was out of the State.

PRESIDENT COOPER. The committee was appointed the year previous by myself.

MR. ANDERSON. No notice of any kind or in any manner was ever given to me of this, and this is the first intimation I have had, when I received this document, which says, "Copy of the report of the fruit-growers' transportation committee." I had never been invited to attend the committee. Now, Mr. President, I ask that I be allowed to file a minority report. I will do so orally, if the reporter will take it. My minority report is this: That this Convention reiterates everything that we have ever said or done in the way of demanding a regular and expeditious service for the transportation of our fruit to the East. That this Convention directs its President to communicate with our representatives in Congress, asking them, or requesting them, to work for the passage of an act or bill that will make it criminal and unlawful for any private car line, or any other line, to give rebates in any way or manner. (Applause.) I think, Mr. President, that will cover the matter fully in my report.

MR. JUDD. I want to make a motion to adopt the report of the minority as an amendment.

PRESIDENT COOPER. The motions will not be in order now. We will take them up as they appear on the program. The next on the program will be a paper by Mr. F. W. Crandall, on "Cured Fruit Marketing, at Home and Abroad."

CURED FRUIT MARKETING, AT HOME AND ABROAD.

By F. W. CRANDALL, of San José.

The subject of this paper has been handled by so many different people, from so many and varied standpoints, and with so little beneficial results from its discussion, that it seems almost like an idle dream to burden this Convention with anything further on the subject; yet when we consider that at its very door lies either the success or the failure of the great dried fruit interests of California, it seems that at least another attempt to bring about better methods than are now in vogue might possibly be excusable.

One of the strange features of this question is, that those who have been in the business longest and handled the greatest quantity of dried fruits are the very ones who are the most fearful and reticent on the subject of marketing. And well they might be, for unlike almost any other feature of the business, long experience, accurate statistics, and careful planning seem to go for naught.

Take, for instance, the prune crop of last year. Statistically, California prunes never stood in a stronger position, and yet, without any apparent reason prices went to pieces and heavy losses were sustained, not only by those who handled this class of goods on the Pacific Coast, but also by the dealers in the United States and various markets of Europe. Whenever any class of products is so handled that the parties handling same lose money, even though they have been fully paid at the full market price for these products, we will lose in the end, for these same parties will take good care not to purchase goods unless at prices which are such that no possible loss may be incurred.

This may be better realized when we take into consideration the extremely low price which we received for our prunes this present season; prices so low that I know of many instances where the grower not only failed to receive anything for his investment, but the returns were only sufficient to pay for the picking, drying, and delivering of his products. This can not go on for long, or it would ruin the entire prune business of the Pacific Coast.

It is not my purpose to belch forth a tirade of abuse upon the handlers of our products in our own United States, for frankly I do not think the fault lies with them so much as with our own disorganized and unbusinesslike methods. I do not know of a single product that is handled in such a grossly incompetent way as are our prunes and dried fruits. But no one seems willing to accept the responsibility of our present methods. My own experience is that those who have never marketed a pound of prunes are more profuse with their advice and *absolute sure-go methods* than are those who have had years of experience. In fact, there is scarcely a grower delivering prunes to any packing-house who will not voluntarily give you a panacea which he will swear, if carried out, will rectify the present disastrous results which we have been getting in our markets.

The one-pound package scheme has been quite thoroughly exploited, and while it has many features to recommend it, it has other features which render it entirely impracticable on a large scale. Establishing packing-houses in the various large cities of the East, controlled and operated by California growers' organizations, is another suggestion which, on its face, might seem practicable, but it would, no doubt, bring disaster to our trade should we undertake to carry it out. Frequent suggestions are made to do away entirely with the fruit broker and sell direct to the jobbers. Experience in other lines will tell us that this is not practicable. And so we go from one idea and suggestion to another and are still at sea and apparently no farther advanced in our marketing methods than we were twenty years ago when the business was in its infancy.

I have never changed my mind one iota in regard to the Cured Fruit Association. I believe if this association, which was organized and which went to pieces with such seeming disaster to a large number of subscribers, had been properly supported by the growers, it would have solved the question of marketing our goods. One thing seems quite certain, and that is, that nothing will ever succeed in this direction unless the entire marketing is centralized and passes through the hands of a competent committee, and that every package of our prunes must have stamped thereon its quality, carrying a guarantee to the trade that if it is otherwise than as represented, the entire prune trade of the Pacific Coast stands back of it and will make it good. This would give great confidence to the trade and would, no doubt, save hundreds of thousands of dollars on losses, rejections, or expense in marketing.

Then again, at the present time no one knows what the other fellow is doing; therefore, instead of distributing our prunes in a reasonable way to the various markets of the United States, sending to each market just what the trade would be able to handle in that locality, we get in and literally jam some of our markets full of prunes, causing a stagnation and oversupply to such an extent that it fairly sickens the trade, so much so that they do not want to see any more California prunes, while other markets have none with which to supply their trade, which legitimately should use carloads.

But, you say, this would deprive each grower or individual packer of his right to do and transact his own business. Granted; but what is business for if not to make a reasonable profit on business done? For my part I would much rather handle business through some organized head and make a reasonable profit on whatever business I transacted, than to sell thousands of cars individually to various markets direct and make a loss.

Then again, in our present disorganized condition it is impossible for us to ascertain in any reasonably accurate way what quantities of fruits we have to offer; that is, to get an estimate of the stock on hand. I have found it almost impossible, when I have been on a committee to get statistics, to obtain such information from the growers that was at all reliable, most of them seeming to be very reticent or afraid to give out any information whatever. And yet such information was absolutely necessary.

In a local way I might refer to one of our coöperative packing-houses—the Santa Clara County Fruit Exchange. I heard some complaint on account of losses sustained by this institution for holding a portion of its product until prices dropped, so that a large loss was the result. Permit me to say right here that had this institution control of the entire product of California instead of the small holdings which are contributory to it, a very different story might have been told.

My long-cherished hope has been that some organization of some kind would come into existence that would include every grower on the Pacific Coast, and through such organization I believe our industry could be placed on a strong, paying, business basis; but until something of that kind occurs we may expect results similar to those which we have been getting from time to time, which are, to say the least, very unsatisfactory, if not such as will eventually prove fatal to our fruit interests.

It has been my pleasure very many times to have visited the trade in nearly every one of our States, and to study the markets and marketing conditions with a view of obtaining better results than we have been getting. I have also extended my visits across the waters, visiting the principal markets of Europe as well, and I am led to believe by close investigation that if business methods were applied to our prune industry (that is, to the marketing of it), within the boundaries of the United States alone sufficient markets could be found at remunerative prices to consume every pound of merchantable prunes produced on the Pacific Coast.

I will give an illustration of an instance which, from actual facts, might be repeated in every large distributive center. We will assume there are three wholesale grocers, each one under ordinary circumstances able to handle five cars. In July or August one of these concerns places an order, we will say, for three carloads at a 3-cent basis, which is the asking price of the California packers. Within a few days a broker representing some other establishment waits upon the trade, and being unable to place his offerings at a 3-cent basis, draws an offer from one of the other grocers for, say, three cars at a 2¾-cent basis and submits it to his California correspondent. After several exchanges of telegrams a deal is finally consummated whereby the packer sells his three cars of prunes to Grocer No. 2 at a 2¾-cent basis. Then again within a few days a broker representing still another packer on the Coast calls upon the trade, and Grocer No. 3 makes an offer for three cars of prunes at a 2½-cent basis, and again after several exchanges of telegrams he purchases his needs for this price. Now the result of this is, that Grocer No. 3 can enter the field and sell prunes at a price less than Grocer No. 1 paid for his, and still make a good profit on his investment. This causes both Grocer No. 1 and Grocer No. 2 to be considerably soured and incensed at the prospect of losses, and the chances are that when their purchases arrive, in order to save themselves from financial losses, they will reject the goods on some pretext or other, and the parties selling same from the Pacific Coast are forced to make delivery at perhaps the same price as Grocer No. 3 paid for his prunes, or in some cases, the market having still further dropped, at a still less price.

And who is to blame for this. In a disorganized condition, as we are to-day, we have no strong organization to stand back of these shipments to demand delivery at the price at which they were sold; therefore, we are at the mercy of the Eastern trade. This not only has the effect of losing money on these individual transactions, but it has a more far-reaching effect than this. Where such uncertainty exists the grocers and jobbers are not inclined to push the trade of distributing prunes to any great extent, and in many cases I have been informed by these very grocers that they instruct their drummers to offer no prunes to the retail trade, and to take orders only when the trade calls for them. Therefore, there is no inducement or argument brought to bear with the retail grocer which will induce him to stock up with our prunes or dried fruits, and, not having a stock, he in turn will not bring pressure on the customers to purchase. This seems to be the general condition all over the country so far as I have seen, and instead of there being a strong prejudice, as many seem to think, against our prunes and dried fruits, the prejudice exists against our business methods of handling them, and you would note a very prompt reversal of this prejudice if we should so change our business system that jobbers in the East could know for a certainty that they would be protected in their purchases, at least until ample time for delivery was given.

Years ago, when prunes were sold at a certain basis price, it meant that a delivery would be made counting each grade on the five point; that is, 40–50's should count 45, and so on down the line. It may be expected at the present time that such shall be, but such expectations will not, in many instances, be realized. There is now a range up to and including the nine and one-half count. The packer offering prunes at a 2¼-cent basis on the nine point may offer a certain combination of sizes for a quarter of a cent less than the packer who offers on the straight five point. This not being understood by many of the jobbers, it is often misleading, and quotations are passed along the line which only tend to pull down the basis price to a lower notch, simply because some packer, with his great anxiety to do business, cuts on the count. Until this and many other kindred evils are remedied, honorable packers are at a great disadvantage in the trade.

At another time the grower often spoils the prospects of doing a legitimate business by consigning a number of cars to some irresponsible firm or broker, who promises great and wonderful results before these consignments are made, but who almost invariably after the goods arrive writes a very nicely worded letter regretting, oh so much, that the market has gone to pieces and that in order to save the dear shipper large losses these goods must be sold for whatever they will bring at the time, and you can always count on their bringing from a quarter to a cent a pound less than the shipper had reason to believe his product would bring when arrangements were being made for shipping same. These goods going onto the market come in direct competition with the legitimate offerings, and being spot goods, from which the smaller trade can draw supplies without the necessity of waiting for shipments from the Coast, have a very demoralizing effect on the market. These examples might be multiplied without number; but so far as the general conditions are concerned, these are some of the more formidable obstacles which we as packers have to overcome.

I found in Europe that the principal complaint was on the part of insecurity of package. Boxes in which the fruits were shipped were not strong enough and in many instances were badly broken, permitting a portion of the prunes or other fruits to be fingered out by the freight handlers and in many instances causing a loss of very many pounds on a single shipment. Dishonest methods also regarding count and quality are resorted to in some instances, and with the very alert eye of the customs authorities, as well as of the buyers of these goods, any shortcomings on the part of delivery will be taken advantage of. While a large quantity of our prunes are purchased in Europe each year, from the best information obtainable I believe that these transactions are only profitable to us here from the fact that it relieves our local markets of supplies which otherwise would be difficult to place. Not that prices received for these goods abroad fully justify all the additional expenditures necessary to make such shipments and to make the remittances, with all charges which are incidental to such transactions. However, under honest handling, I believe the consumption of our dried fruits can be extended almost beyond our capacity for production. Generally speaking, they are looked upon as very satisfactory in the channels of consumption, so far as I was able to ascertain.

Much more might be said on this subject, but I will not trespass upon the time of this Convention for a further discussion. I trust, however, that something may be done along these lines that will remove the very many obstacles with which we now have to contend in the marketing of our fruits, and I will again repeat that it is my honest opinion, and I believe it will be shared by every member of this Convention, that nothing that will amount to anything can be done until there is some perfect organization having control of the marketing and packing of our California dried fruits. In some cases I know where our prune-growers have agreed to deliver prunes for from $2.50 to $5 a ton less than the actual cost of dipping and curing and delivering same.

I wish to call attention to the fact that a machine will be here for your inspection that will pack prunes in boxes in sections instead of in layers, and also a machine for pitting fruit, which seems to be a marvel of perfection.

FRUIT TRANSPORTATION.

By PAUL SHOUP, of San José.

I beg to thank the Convention for the courtesy expressed in your invitation to submit an article on transportation from a railroad point of view.

It is believed that a fair knowledge of one another's difficulties in the work in which we must coöperate will lead to a better understanding. It is keenly realized that our limitations as carriers affect your limitations as producers. If we could lightly waft the sunshine fruit of California from the producer to the consumer's mouth, at an airy trifle of cost, we would gladly do so; for your prosperity is the prosperity of your home railroads. The backbone or the substance of a section lies in the maintenance and increase in wealth and population; and this very prosperity of yours is the mainstay of the railroad's existence, and is expressed in its earnings. In the transportation of your fruit East, the railroads can not provide ideal conditions; the best that they can do is to do the best they can and to submit for your fair judgment their work in overcoming adverse conditions, just as you work in your business against such conditions.

California is geographically isolated. It is hemmed in by the ocean, the mountains, and a half-awakened desert.

You require of your railroads that a peach or a pear or a plum, fresh from the tree, be transported three or four thousand miles over the highest mountains, across the greatest wastes in the United States, and be placed in the lap of the consumer as delicately fresh, and more beautiful and luscious than the fruit that grows in his dooryard. A century ago this would have been a task for Aladdin's lamp; but I am afraid then that some of our friends would have found fault with the lamp—perhaps it *was* smoky!

In a general way, the fruit-growers and the railroads must work together to overcome the difficulties they face. These difficulties are the great distance of California from its fruit markets, the perishable nature of the fruit, and the coincidence of the Eastern demand with the ripening of the crops—as in the case of prunes, making loss of time a loss of market.

The railroad which I serve has been attacked for the things it has not done. I beg your indulgence to point out some of the things it has done, in order that you may know of adverse conditions already met and conditions as they are.

From the official reports of the Southern Pacific, I find that between June 30, 1900, and June 30, 1904, the Southern Pacific spent for equipment, including 362 locomotives and 12,476 freight cars, $22,979,000. You wanted faster fruit trains, more engines—you have them. The State needed more cars for fruit, for grain, for cattle, for what not—it got them. In reconstruction, chiefly on the highway for green fruit, Sacramento to Ogden, has been spent $29,000,000. More powerful engines, moving at a higher speed, made a corresponding track and roadbed necessary. They were furnished, and permanently furnished to meet the demands of freight traffic. New yards, new terminals, new steamers—these were necessary, and they raise the total expense of improvements within four years to over $72,000,000. Perhaps some of you think this was paid out of the earnings of the road. Then the road would be in the position of a merchant whose business forces him to put his profits into stock every year. The Southern Pacific did not fare so well. At a specially called meeting of the stockholders, July 20th last, they found it necessary to vote to sell $40,000,000 worth of preferred stock because of these improvements; in short, to borrow $40,000,000 more to meet these expenditures. Red-ink returns are not liked by fruit-growers, but it is not all one-sided. You see that stockholders of railroads sometimes get red-ink returns, too.

Those of the Southern Pacific had no dividends for years and have decided it advisable to increase their obligations very largely besides; and the present owners paid roundly in cash for their stock, as Judge Lieb, if he be present, can certify. Now, if none of you had received any returns from your orchards for four years, and were now called on for additional money—one half of your first cash investment maybe—you would feel that for a little while you had done your share.

But I am not here to plead poverty for the Southern Pacific, rather to show you in these figures and in pursuit of a wise and conservative policy, that the owners of the road have spent millions upon millions of dollars to better your transportation facilities.

To this, I shall refer once again, later on; but I know that you will be interested in learning what expense the railroad has been put to already in improving your service in connection with other requests you have at hand to consider. Daily contact with shippers for the last three years has taught me that our fruit shippers, above all other things, want service, quick service East—want it above any reduction ever suggested in freight rates.

The principal reason in referring to these expenses is that some of our fruit-growing friends think we should add a line of refrigerator cars to our equipment. I will say that 26,173 freight cars belong to the Pacific Coast service of the company; all told, we had 43,756 freight cars. If the Southern Pacific discontinues present relations with private car lines, it must provide, to be on the safe side and allow for the lame, halt, and blind, 7,000 refrigerator cars to move 17,000 or 18,000 cars of citrus and deciduous green fruits. It is asked to add one sixth to its freight-car equipment of cars not suitable for other traffic to take care of business in citrus and deciduous green fruits. This, though important, because it is through business, represents only one per cent of the tonnage of all kinds of freight handled by the Southern Pacific.

The private car lines now used operate over the majority of the railroad lines of the United States. To replace them on our line increases the equipment unnecessarily. Refrigerator cars are quoted at $1,200 each. Seven thousand would cost something like $8,000,000. The interest charges and taxes would be not less than $500,000. Of course, all these would not be required to handle deciduous green fruit alone, but they would be required, if there was a break with the private car lines, to meet the wishes of deciduous green fruit shippers—and, gentlemen, the total gross revenue to the Southern Pacific from all the green fruit sent East under ice during the past season would not meet the interest charges, repairs and taxes on this equipment. I do not believe that any fair-minded business man in this audience will take issue with that statement, in view of what has been noted, and what is to follow.

For I want to say to you here plainly that if we assess to green fruit, citrus and deciduous, moving East, its proper proportion of charges—maintenance of way, conducting transportation, mileage on cars, general expenses and taxes—there would be no net revenue to the Southern Pacific from the movement of green fruit. In this statement I waive all interest charges, all returns to stockholders from their investments. It is profitable to the Southern Pacific to handle green fruit only because its roadbed and engines, supported by other earnings, are present; and green fruit transportation, at the present rates, is thereby made feasible. This is not a wild statement. You have required of us a schedule of sixty hours, Sacramento to Ogden, on your green fruit. Our average time last season was sixty-one hours. In order to make the time, our average trainload from Sacramento to Sparks was twelve cars; from Sparks to Ogden the number was increased about fifty per cent. These trains had to be run on a comparatively fast schedule. They had to be lifted up over mountains and set down again with promptness. Then, because not built to handle other freight with advantage, and because they had to be rushed to green-fruit stopping-points, when returning westward, fully seventy-five per cent of the refrigerator cars were brought West empty. The dead weight or tear of a refrigerator car is about eighteen tons, or four or five tons more than a box car of same space capacity.

The average weight of a green-fruit carload from San José during the last season was 12.15 tons. Then we must secure 12 tons of paying freight, carry a dead weight East of 18 tons of car, 4 to 5 tons of ice, and carry back seventy-five per cent of the 18 tons deadhead, or 13½ tons. If all freight required the movement of the same dead weight over the line, 35½ tons to 12 tons of freight, and that on quick time, what do you suppose the result would be?

In presenting these figures I have no desire to weary you, but I feel that you are interested in knowing why the management of the road, in justice to the owners thereof, must, as they are conscientious and thorough, handle the subject of green fruit transportation, the most exacting freight transportation that they have to undertake, with caution and much careful consideration.

I hold no brief for any shippers, nor for any private car lines in this matter; yet inasmuch as we are considering this matter of green fruit transportation from every possible point of view, it is not amiss in passing to note something of the total transportation charges on green fruit compared with the gross proceeds. In the "California Fruit-Grower," from the middle of July until the latter part of September, I counted 209 cars of peaches, plums, pears, and grapes, on which the gross sales in Eastern markets were reported; the average per car being a little over $1,000. I did not include any cherries, as they were so very much higher in returns than any other fruit. The freight charges on these cars ran from $300 to $400, the minimum weight being twelve tons. The refrigeration charges would be from Sacramento and points East, including icing and re-icing of car, to Chicago $80, and to New York $100, or if under ventilation to Truckee, $15 less. The charge from San José, if the car is iced here, would be $15 more. If, for example, a car containing twelve tons, moved from Sacramento to Chicago, and it paid the full refrigeration charge of $80, and the freight charge of $300, and sold for the average named, over $1,000, then, after the transportation charges were deducted, there would remain $620, or over $50 per ton, out of which to pay the balance. The total freight and refrigeration charge would be less than $33 per ton, or, on a box of peaches, for example, about 34 cents. The refrigeration charge alone would be a little over 7 cents. An inspection of returns indicates to a layman that the great governing factor in the prices of California green fruit in the Eastern markets depends upon the weather, the condition of the fruit upon the arrival, and the demand. Variations in cars only a few days apart in the same market are quite often as great as the freight and refrigeration charges combined.

I do not find that the green-fruit interests of California are harshly dealt with by the transportation companies when comparison is made with their competitors. For example, the green-fruit rate from Atlanta to Chicago is 63 cents for a distance of 733 miles. From San José to Chicago, a distance three times as great, the rate is $1.25. Further, the Atlanta rate quoted is on apples, and other green fruits are higher. From Little Rock, Ark., to St. Louis, the green-fruit rate is 65 cents, for a distance of 345 miles. From Jacksonville and Taylor, Texas, to Chicago, the rate is $1.19—almost as great as from San José. Nor do the Georgia peaches have any great advantage in refrigeration charges, distance considered. It costs for refrigeration per crate from Georgia to Chicago, 12½ cents, or $68.75, as against $80 from Sacramento to the same market, though the distance is nearly three times as far. For refrigeration, the charge from North Carolina points to New York and Philadelphia is practically the same as from Atlanta to Chicago. The charge for refrigeration from stations on the Frisco system in Missouri, Arkansas, and Indian Territory to Chicago is $60 per car. I merely cite these instances to show you that California fruit-growers are not alone in having to pay refrigeration charges. Ice in San José is worth wholesale about $6 per ton, and as four or five tons are put in a car at the start, and it is re-iced as necessary on the road, it is plain to be seen that a very goodly share of your money goes up in vapor.

In the foregoing I have demonstrated to you that the shipper of green fruit pays far less per mile for either freight charges or refrigeration than his Eastern brother does to reach the same markets, though the transportation difficulties are far greater with us than with the railroads in the East. That you are entitled to the most favorable consideration is true. You are a long way from your market, and accept great risks in sending fruit thereto; but, gentlemen, don't you think that as a business organization, interested in the welfare of the people supporting it, because their welfare is its own, the railroad has some troubles as well as the fruit-grower, and that if service is to be maintained to the standard required by you, rates must have some consideration to the end that the necessary money may be forthcoming?

Briefly, then, to recapitulate: The transportation of green fruit East is to us the most expensive freight transportation that we handle, because the quickest time is required; it is necessary to hire cars, each of which can average little better than two trips East per year for us; these cars are of such construction that it is not economy to load them with other freight; they weigh several tons to the car more than the ordinary box car; seventy-five per cent of them have to be deadheaded empty westbound in quick time; the minimum carload of green fruit is the least minimum we have in any California product of any importance; we are required with each car to handle an average of several tons of ice all the way; and yet our rate to Eastern markets, compared with the rates of your competitors in the East to the same markets, are, mileage considered, very much lower indeed.

In passing from the subject of green fruit to dried fruit, I beg first to call your attention to the fact that the freight earnings of the rail lines of the Southern Pacific Company, during the last fiscal year, were 1.014 cents per ton per mile; while on transcontinental movement, via the short line from San José across the continent, our earnings per mile to Ogden would not reach eight mills per ton; and if all of our freight were reduced to the same earnings as dried fruit East per ton per mile, our gross revenue would have been reduced a good many millions of dollars. I mention this because I have heard the statement, which is to me amazing, that out of $20 per ton revenue for transporting dried fruit across the continent, the railroads clear, above expenses, $11. I do not know how it is with your connections, but I think that any gentleman who could show our management how to operate at such a magnificent profit would be received with open arms, and be a cause of a jubilee meeting of stockholders. The conditions governing the movement of dried fruit are only less binding than those that govern green-fruit transportation East. We must, in the fall of the year, bring trainload after trainload of empty cars West from our connecting lines; our shippers require prompt service to reach the market while it is ripe. As many a shipper here can testify, dried fruit is perishable.

It has been declared that we should make the same rates on dried fruits as on beans, lumber, sugar—these are not in the same class at all. They have no such average value per pound, as the dried fruit shipped from California. We know, because we have to pay the claims on loss and damage to freight. Nor would dried-fruit shippers be content with the same service that satisfied the shippers of these other commodities; and on some of these commodities we have connections in the East that consider the rates too low to justify them in participating, though they can operate much more cheaply than the Western road. We do not consider that these lower rates yield us fair revenue; they are forced upon us by market conditions and water competition and we accept them as a by-product. It can be demonstrated to a certainty just how far, and under what rate, we can force the lumber and sugar of California in the Eastern markets. And as yet these products of California have not been able to get into the larger part of the Eastern market. Is this true of dried fruit? Are your troubles due to freight rates, or to something else.

You pay $20 per ton to get your dried fruit into Boston or New York. The apple-grower in Sedalia, Mo., pays $12.90 per ton for much less than half the haul. You pay $20 on dried fruit in boxes to get it to St. Paul. The Sedalia fruit-grower pays $9.80, though but a comparatively short distance from this market. The dried-apple shipper up in Watertown, N. Y., pays $4.80 to get a ton of fruit into the New York market, though he does not cross one State. I could multiply these instances endlessly, but it is unnecessary. I think that you will all agree that, distances considered, your Eastern competitors have none the best of it in dried-fruit rates. Further, the California fruit is in a class by itself. The prices are not governed by the prices of the Eastern dried fruit; if so, the prices on prunes this year would not be so low in comparison with the prices on peaches and apricots. The basis price for prunes this year has been less than that of last season, considerably more than the entire freight charge East per pound. Therefore, if the railroad companies carried your products East free this season, they would not be able to put you on last season's basis. The trouble is elsewhere, and I think your advertising committee has the right idea in believing that the great trouble is that you attempt neither to create nor to control the demand, but produce and market your fruit without reference thereto.

Further, every prune in the valley is free, you might say, to compete in the Eastern market with every other prune. I think I am right in saying that the growers do not even attempt to check up the growing crops, as the Government does the wheat or cotton crops. We are all agreed that something must be done to help the dried-fruit industry, but there is no necromancy in railroad rates that will bring about the desired results. The reduction suggested in the bag rate on prunes from $1.30 to $1.00 would, if it accomplished the purposes that the author desires, simply reduce the rate about one third of a cent per pound on each pound of prunes shipped, if they all went in sacks. Prunes in boxes pay about one tenth of a cent per pound less than prunes in bags in freight charges. The statement has been made that the present relations of rates on dried fruit in boxes and bags is responsible for the decrease in prices. When the rate was $1.40 on both packages, the statement was made that the trouble with the prune market was that a large enough proportion could not be packed at home. Under this rate, prunes dropped in value, between 1890 and 1893, about one half. In September, 1893, the rate was reduced to $1.20 on prunes in sacks and $1.00 on prunes in boxes. It was represented in securing this reduction on boxed goods that it was hard to get box shooks in the East; that it did not pay to pack there; and in fact it was impossible to maintain packing-houses in the smaller towns over the country, which would buy one, two or three, or a half dozen cars, if they could get them in boxes ready for the retailer direct from California. It was alleged that consumption was seriously interfered with, because the fruit had to go to the largest centers to be packed, and then pay a local freight rate to reach the consumer. It was claimed that this meant delay, whereas packing here meant getting the fruit to the consumer in the shortest possible time. It was suggested by shippers that the interests of all of the small wholesale grocers over the United States would be increased, if they could get dried fruit in boxes direct from California rather than from a competitor. The railroads were told that any Eastern dealer who wanted his own brand could have it packed here at less expense than in the East. It was stated to the railroads that if the fruit were packed here it would mean protection to the California fruit; that our fruit, being the best fruit, could not be mixed nor made to carry Eastern fruit of inferior quality. Growers claim that Santa Clara Valley fruit should have a premium over all other, or have the preference, and they wanted to maintain their individuality. Growers came with the argument that it was easier to deal with purchasers living here and operating here than if in the East; and alleged that under different conditions the basis price would not have fallen from about 10 cents in September, 1890, to 5 cents in September, 1893, when the rate was reduced.

Gentlemen, which arguments are the railroads to believe? At one time we are confronted with one set of arguments, and later with a different set of arguments, in behalf of the prune industry. Frankly, with the freight rate on dried fruits at the present figures, I do not see how any reduction therein can be your salvation.

We have endeavored strenuously to improve our service to get your green and dried fruit into the market in the best of condition and at the time that the market wants it. I think that therein lies the greatest good that we can do you. The service this year has been superior to any of previous years, everything considered. We promised a schedule on green fruit of 139 hours, or five and four fifths days from Sacramento to Omaha, and the average time was one hour less than that.

In conclusion, I want to take issue with the gentleman who would build a Chinese wall around California. I have said to you that within four years the Southern Pacific Company has spent nearly $72,000,000 in improving this service, and this has been to take care of business to California. The present owners of the road have not only for four years waived dividends, but have borrowed some $40,000,000 to improve your service. It is not alleged that this expenditure was for the benefit of California as an asylum in the need of charity, but it was an expenditure made because the owners were strong in the belief in the present and future greatness of California. It does not benefit the State the less for that; in the better service, you as well as the railroad will reap profit. We must not discredit California—that does only harm and no good. There are many interests here, and any newcomer has his choice among them.

Shall you have less faith than the people of the East? Shall you send word to the East that California is a delusion and a snare, and that her present citizens, knowing conditions as they are, should plant unwisely and set up on the hillside and create in the valley thousands of homes amid a dotted paradise, fruit trees that should not be?

F. W. CRANDALL. The citizens of San José, especially the Chamber of Commerce, have arranged for a little side trip over the Interurban Railway, from San José to Los Gatos, by way of Saratoga, for to-morrow afternoon, at 1:30 o'clock. All of those who are visiting this city, if they will report this afternoon, if possible, at the rooms of the Chamber of Commerce, on First street, and show their present transportation, will be provided with free transportation for this side trip over the Interurban. It is hoped that you will all avail yourselves of this side trip.

WIDENING OF OUR FRESH DECIDUOUS FRUIT MARKETS.

By HON. ALDEN ANDERSON, of Suisun.

I have been requested by the Horticultural Commissioner to prepare a paper on the subject of the "Widening of Our Fresh Deciduous Fruit Markets," and I have done so, but in so doing do not believe that I have suggested anything particularly new, but rather have put in sequential form facts and advice, declarations and suggestions, offered heretofore by myself and many others.

To make possible the "widest" and best distribution, it must be presumed that we have normal crops of good average quality of the different varieties of fruit, and in the several and dissimilar growing districts in the State.

There are three essentials, dependent each on the other, and all vital and necessary to the successful handling of fresh deciduous fruit shipments, and, stated in the order of handling in the regular routine of the business and not in regard to their importance, they are: (1st) Growing and packing; (2d) Transportation; (3d) Distribution and marketing.

Growing and Packing.—It is generally conceded that the growers of California, as a whole, give more intelligent attention to this phase of the business than do the growers of any other horticultural district. This, partly because of necessity; our remoteness from the large distributing centers making it imperative that only good fruit, properly thinned, be grown and that it be packed with the utmost care, to the end that it shall arrive at its destination in salable condition, and for the best results, firm enough to stand reshipment. However, as all do not exercise the same care, it is well to state a few general principles always applicable. Fruit for shipment must be absolutely free from blemish or parasitic insect infection, because fruit that is bruised or blemished will not stand transportation, and most all of the other States, and countries as well, quarantine rigorously against *all* infested fruit, and if any of such fruit is found in a shipment, the whole is liable to confiscation. Packages should be firmly nailed and snugly placed, so that there can be no bruising because of jolting in the wagons, bumping of cars, or any other of the incidents of transportation.

In packing fruit, even grade and quality should be packed in packages by themselves and the packages plainly marked with the contents thereof. One of the most improper and unprofitable things that can be done is to pack large and small fruit in the same package. The trade which desires the large fruit does not want the small fruit at any price, and those who are interested in small fruits are not interested in the large fruits, as they desire a commodity numerically greater in a package for their consumers. It will be seen that care, intelligence, judgment, and constant supervision are necessary in growing and preparing the fruit for market and in placing it on board the cars in proper condition.

Transportation.—Practically all fresh fruits are to-day transported in combined ventilator-refrigerator cars, and no matter what our ideas or desires in the matter, the trade seems to demand that kind of service. Cars for carrying this class of product must be sweet and clean and without odor. They must not, therefore, be used for the conveyance of commodities that would injuriously affect such conditions. Likewise, being highly perishable, it is vital that sufficient cars be always on hand to load the fruit in promptly, as it can not be held over after being picked and packed for market. Great care must be exercised to properly tier and brace the contents in the cars to prevent damage from jolting and constant bumping of long freight trains. The fruit being loaded, the matter of transportation or movement of the cars becomes the element of concern. This essential is probably, at the moment, the most important of all, for without the expeditious, proper, and regular movement of cars, all care in the growing and preparation and all detail arrangements of delivering in good order, sale and distribution would come to naught. Always a vital question, changing conditions make it even more important at this time than ever before.

Many other States have, in recent years, developed horticultural districts where deciduous fruit, notably peaches, are raised in large quantities. While their transportation rates for the shorter haul may be comparatively higher than are those from California, still their nearness to the large distributing centers makes their products more available and practicable to get into quick consumption, which fact enables the growers of those districts to let their fruit mature more thoroughly, thereby increasing its quality and flavor and the value with which it is regarded by the consumer. This increasing competition makes it more imperative that a quick and regular service always be had at the lowest rates possible. With a quick and *regular* service, our fruit can be matured to the last possible degree, thus adding to its appearance, quality, and flavor, all of which naturally assist in enlarging the demand. On the hardier varieties of fruit, such as pears, especially in the earlier part of the season, cars could be run under ventilation a considerable portion of the route, or head-end iced, sometimes even to destination, with the consequent saving in refrigeration; whereas now, while some cars are run ventilator to the Sierra Nevada Mountains, cars are generally iced full at shipping point as a matter of insurance. Then, too, approximately, one season and another, seventy per cent of our deciduous fruit is disposed of at auction in the various Eastern cities, and as auction sales are held only on five days of the week, *i. e.*, no sales being held Saturday or Sunday, it is necessary to have regular service so that there will be no "bunching" of cars, especially at time of heavy shipments, at any point over Saturday and Sunday.

Marketing and Distribution.—California, in its entirety, raises a greater variety of fruits than any other horticultural district, and while this is true, it is also true that many different districts here make a specialty of particular varieties of fruit, with the result that almost the entire shipment from some districts, which in the East might mean an area as large as some States, is of one kind of fruit. With the system of disposing of fruits which has grown up because of custom, coöperation on the part of those forwarding the product is absolutely necessary to obtain the best possible results, to the end that the fruits of this State shall not be brought into competition with themselves, and that the utmost evenness of distribution as regards the different varieties can be given, comparatively, to the different consuming centers.

For instance, without any coöperation, practically all the pears shipped on a given day may turn up in one city; nearly all the peaches in another; most all the grapes in another, etc., with the resultant demoralized market on those varieties in those cities and scarcity in others, whereas an even distribution would mean good prices for all varieties in all the cities. Experience has shown that when a market becomes demoralized on perishable products it will not recover so quickly as on any other commodity.

Any scheme of distribution can only be partially successful and can not attain its highest point of efficiency unless there is practically complete coöperation, because the smaller of different interests working in competition with each other, even though one interest has a much smaller percentage of business than the other, if they are disposed to cut prices, can fix the market price at which the whole must sell, unless there is a marked shortage in the volume of offerings, for if the buyer is frightened and timid and will not buy except at extremely low prices, the perishable product will not keep and must be diverted or sold at any offer obtainable. A car of cheap fruit on a market will be the criterion of value long after the fruit is consumed. I have known, in times past, interests shipping two or three cars per day who offered their cars daily to about fifteen or twenty distributing centers, and each of those centers believed these two or three cars were destined for their particular city, all of which has a depressing effect upon the buyer when looking for supplies. If for any reason any market is left bare of fruit for a few days, that time is never made up, for it has been figured, and I believe correctly, that a day lost in the distribution of perishable products is never made up, for the next day takes care of itself, and there is not, in this line, like so many articles of staple products, an average of so much per capita of consumption, but it is rather a matter of particular time and place and the inclination of the consumer to buy.

The direction of the movement of all cars and the determining of their destination should absolutely be controlled from California, and all consignments whatsoever should be eliminated. Buyers then would know that when they purchased fruit in California, they would not have consigned fruit to come in and cut prices on them, because the tendency of those handling consigned fruit is always to undersell their competitors. With an even price to all buyers, they would have no fear of ordering ahead and of making arrangements for regular supplies, and the very desirable element of stability would be given to the business, both East and West. Buyers would feel that they had complete protection and would not be interested in trying to buy so cheaply to forestall any possible adverse competition, and the grower would know just what he would receive for his product, and if the prices were not satisfactory, he could divert to the drying-ground or the cannery.

All the necessary employés in the larger centers in the East and all brokers in the smaller ones should be under the control of, take their orders from, and be in direct communication with the central agency in California, and they should be advised daily of all shipments and also of probable shipments two weeks in advance at all times. With this knowledge they could constantly keep in touch with the consuming trade at all points and make possible the disposition of the greatest number of cars in each locality. The wider the distribution, the better the average returns, for, while some growers prefer to sell all their fruit at auction, and do not desire free-on-board sales, and others desire free-on-board sales only, it must be remembered that all the fruit which is diverted from the auction rooms lessens the supplies to that extent and increases the probability and possibility of obtaining higher prices for that which sells at auction.

California fruit, as regards superiority and quality necessary to stand transportation and remain firm when placed on sale, is second to none raised anywhere in the United States, and is far superior in this respect to most of it. If it were not for this factor in our favor, because of our remoteness from the great distributing centers, it would be practically impossible to meet competition in the East on some varieties of fruit from their nearby fruit-growing districts.

It is unnecessary for me to say that we must have as low rates for refrigeration and transportation as possible, always keeping in mind the character of the service we must have. This is in the interest of the transportation companies as well as the grower, as the more remunerative the industry, the greater the incentive to increase plantings, and consequently the greater tonnage available to be hauled. With a perfection of transportation service, with the quality of fruit we raise, and with the ability of our people to prepare the same for marketing; with coöperation in the distribution of it, and with constant effort and study to get as close to the consumer as possible, I can see no reason why our markets can not be constantly extended.

Although the past season was an unusual one, and we had very poor general crops in the deciduous shipping fruit line, it is not presumable that such a condition will occur often. I am not one to argue that any great shrinkage in the volume of shipments of any variety will inevitably enhance the value of that which is left. Experience has shown that where any commodity rises to the point that it can adequately supply at satisfactory prices any given market, that commodity is in a better condition to command remunerative prices, under wise direction, than can those products on which there is a casual or uncertain offering, because when that position is reached, consumers look to that section or district to supply their wants, if its value is on a fair basis, without endeavoring to look to other localities for the same products or to obtain other supplies as a substitute.

The effort should ever be for stability, permanency, and regularity, and to eliminate to the greatest possible degree, by coöperation, the elements of uncertainty, chance, and speculation. The above are the essentials and conditions, in outline, necessary to my mind to bring about conditions that will result constantly in the "Widening of our Fresh Deciduous Fruit Markets."

CO-OPERATIVE MARKETING OF CITRUS CROPS BY THEIR GROWERS.

By S. P JENNISON, of Covina.

It is not a dream, nor a thing untried, nor of doubtful result. It is a system the practical trial of which for a dozen years in the face of all sorts of competition has justified the faith and satisfied the hopes of those who took the risk of its failure and have reaped the advantages of its success. It was not the preference of some one's socialistic belief. It was the fruit of a condition, not a theory.

The growers of oranges were up against a hard fact. They were raising more fruit than the speculative buyers would take. Somebody's fruit was every year left unsold or else sold at unremunerative prices. The buyers purchased as much as they believed they could sell to good advantage in the markets, which then took oranges to supply the demand which at those dates existed. They had no money invested in oranges or orange property until they chose to buy the fruit, and to induce them to make that choice they must have in every deal such conditions as to quantity bought and prices paid which insured them a good and safe or even an enormous profit.

When this fact appeared, years before the coöperative exchange was thought of, some growers combined to pack their own fruit and then consigned their pack to Eastern commission men for sale. If the growers happened to be wise or lucky in the choice of commission men, the results were often satisfactory; but another fact appeared here, that while some fruit so consigned sold for fair prices, other fruit, owing to lack of push, or skill, or some other quality, brought nothing, or worse. Besides, there were risks of loss in such long shipments of perishable fruit, against which coöperation in marketing would serve as a sort of insurance. To meet these and other conditions as they developed, the system now practiced by the Southern California Fruit Exchange was evolved. Necessity was the mother of invention.

The system is perhaps understood by many of you, but a brief statement of the more important details may be useful.

The membership of all the bodies which, taken together, we speak of as the Exchange, is exclusively of citrus fruit growers. Nobody but growers controls or in any way affects the policy or action of any of those bodies. Nobody receives any money or other advantage from any organization of the Exchange as pay received for his fruit sold for him, or as wages for service rendered. The fruit is packed by bodies of growers usually incorporated under the name of associations. The associations within a district of convenient extent have organized exchanges, as the Riverside Exchange, Tulare County Exchange, etc., each association having, as a rule, one director in the local exchange. Each local exchange elects one representative, usually its manager, to the central body, which is legally known as the Southern California Fruit Exchange. There are fifteen local or subordinate exchanges, and about sixty-four associations.

The system, or organization, you observe, secures to the central exchange a perfect understanding, at all times, of the condition of the crop in all parts of the producing field. Contracts are made between each individual member and his association, between each association and its local exchange, between each local exchange and the central one at Los Angeles, which contracts define the obligations of the parties thereto, and altogether they form, with the various articles of incorporation, the constitutions, so to speak, according to which the whole business is conducted.

The associations grade, size and pack the fruit, load the cars, and deliver the bill of lading of each to the local exchange, which, together with the central exchange, attends entirely, with one exception, to the sale of the goods. To look after that business some seventy-five traveling men. or "agents"—"drummers," in fact, as they are sometimes called in other lines—are employed by the central exchange, mostly upon fixed salaries, and devote their entire time and energies to the service of the Exchange, and nobody else; among other duties, visiting, each one in his assigned district, every buyer of oranges in car lots and every place large enough to use a carload at one time, endeavoring to get orders for fruit, learning all the details, what varieties, what brands, grades and sizes the buyer wants, and arranging the price. The orders so obtained are telegraphed to Los Angeles and by the sales manager there 'phoned to the local exchanges to fill. Orders that name special brands must go to the associations that pack them. Orders that only name grades and sizes are distributed among the associations in such a way that the fruit to be shipped during the season by the associations shall be going forward at all times in about equal proportions.

The central exchange fixes the price from time to time at which orders may be taken or sales made. A traveling man, or agent, may get more if he can—and he often will—but he may not finish a final deal for less. If he receives an offer for a car at less than the stated price, he must at once wire it, if not absurdly low, to the Los Angeles office, and here is the one exception to the statement that the exchanges do the whole business of selling. For an offer of a price below the ruling one must be passed on to the association which loaded the car, and the manager of that association, who knows most about the fruit and the risk of refusing the offer, is the one to accept or reject it.

Here let me say that a statement in a paper just read to us that it is impossible to dispense with the employment of brokers is contradicted by our experience, for we have dispensed with them. A few agents in small and isolated places are paid by brokerage, but the aggregate of the sales of all such is comparatively inconsiderable. Brokers can be dispensed with, and the reason the Southern California Fruit Exchange ceased to employ them, except as stated, is that by experience it found salaried service was both cheaper and better.

The governing idea, controlling the rules and practices in all quarters, the associations, the exchanges, and the agents' offices, is that all members in all districts shall fare alike, all shall have an equal show, every man and every association shall have a fair deal.

To illustrate: In the lingo of our industry there are three grades of oranges—fancy, choice, and standard—and there is a difference in price between any grade and the one nearest to it of 25 cents per box. Certain sizes are called "regular," and sizes larger than the regular ones are "large offs," while sizes smaller than the regular are "small offs," and there is a difference in price between the regular sizes and either kind of "offs," of 25 or 50 cents a box, according to the degree of "offness," let me call it.

Now it is easy to ascertain how many boxes of fruit of every grade and every size had been sold in every pool and how much money was received from every grade and size. Then it is easy to calculate how much each box brought in, on an average, and that amount less 10 cents per box to cover expenses of the Exchange, and 30 cents per box for packing-house expenses, is paid for every box of the nine sorts—grades and sizes—to the growers who produce the fruit in that pool. A "pool" is the period covered by each settlement, and is determined by each association for itself. Such calculations as above referred to are always made and a statement is sent every grower, showing number of boxes of each grade and size shipped by him, rate per box for each sort due everybody, sum due him for each sort, total sum due him for all sorts, and there is his check for the amount. Every man receives the same amount as the rest according to the quantity, grade, and size of the fruit each had in the pool.

Fair dealing requires that every association have an equal opportunity in all markets, and take equal chances on all, and that is meted out to them.

Two things, namely, that the Exchange is ourselves, we the growers, and that we thus can and do give ourselves in all respects an equal and fair show, have attached our older members to it with unwavering confidence and devotedness. They are convinced beyond all doubt that they receive more for their product than they could obtain otherwise.

As our brands are packed year after year from fruit grown on the same trees in the same locality, graded and handled in the same house by the same hands, for the most part, there is a greater uniformity in quality and grade than would be found under other conditions. As the same agents have sold for us for years, and usually without change of place, it is but natural that their acquaintance with the ways and requirements of "the trade" enables them to serve buyers better with exactly what they want, while obtaining for us higher prices than the average of any other equal quantity of fruit.

The expenses of packing and sale are only what we judge necessary, and all reserved for expenses above the actual necessary outlay is returned to us at the end of the season. The average of such expense for all associations for the last season was about 32 cents per box. The California Citrus Union received 39½ cents per box for all the fruit shipped by them. The 7½ cents difference may not have been excessive for the shippers of the California Citrus Union to receive, but if the growers whose fruit paid it had been members of the Exchange they would have saved it for themselves. The gross amount on all boxes shipped by them at 7½ cents a box would be $234,419.55.

Those growers lost by their connection in another respect. The average returns per car of fruit shipped by the Citrus Union through the late Fruit Agency was $6.36 less than the average returns per car of fruit shipped by the Exchange through the same agency. The Union had no money interest in getting higher prices. But the more the Exchange fruit brought, the more the shippers got.

I cite these facts in no manner to dispraise the Citrus Union, for it acted in the matter as the conditions and agreements impelled. Whether any such results will again follow, I express no opinion.

But I affirm that it is inevitable that the coöperative shippers of their citrus fruit will receive more for their product than an equal amount can bring otherwise, unless the other shippers give over their profits.

As to the late Fruit Agency I have no complaint to file, no answer to interpose, and no witness to call, and a court of law would not permit proceedings against a dead defendant.

The conditions, the feeling, the prospects of the Southern California Fruit Exchange are assuring. We have had a bad time, but it has passed and our coöperative selling saved us much. We marketed last season about forty-six per cent of the entire crop. No season, Manager Woodford says, ever began better than the present. A greater percentage of the citrus crop has been put in the hands of the Exchange for 1904–05 than ever before. Over 600 carloads have been shipped since the beginning of the Exchange year, of which amount over ninety-five per cent went upon orders. In fact, the difficulty for some time past has been not to get orders for fruit, but to get fruit for orders on hand.

The idea of coöperation in marketing a crop by its producers is in some cases surely capable of successful realization. It would be too much for me to say that it is possible to command success in all cases. In any event, the scheme in every case, I suppose, will have to be worked out by believers in the project and acquainted with all the details of production, handling, transportation, etc. Maybe a general union of all coöperative fruit interests for all purposes will be impracticable; and perhaps it may not be. But the Southern California Fruit Exchange looks upon all attempts to found and perfect other coöperative undertakings with hope and most earnest good wishes. We have not the vanity to think that we can instruct you. But we want to encourage you to persevere and to stand strong for mutual help and a square deal. If the time ever does come for a possible closer and larger union, we shall certainly be most ready to consider it with all friendliness and good will.

We have had a little recent experience in uniting, and found that not every union is desirable. But then, again, there are others.

THE CHAIRMAN. These papers on the subjects that were laid down on the program this morning, of course, were rather longer than was expected, but I think we can devote a few minutes before recess to business, and we will take up the report of the California Fruit Distributors by Hon. Alden Anderson. If some one will make a motion that his report be accepted, it will be in order.

MR. STEPHENS. I move that the report be received and placed on file.

Motion seconded.

THE CHAIRMAN. Remarks are in order. I will call upon Mr. Anderson, to see if he wishes to make any explanations or remarks.

MR. ANDERSON. I don't know that any remarks will be necessary. It is simply a statement of conditions and facts that have happened. If any one wants an explanation, I will give it.

In order to put the matter in a proper light, I move the substitution of the minority report of the Committee on Transportation for the other report, and I would like to amend what I suggested there, that a request be made to our representatives in Congress that this amendment to the Interstate Commerce Law give the power to the Interstate Commerce Commission to adjust rates when they are unjust.

Motion seconded.

MR. STEPHENS. I would like to know what the minority report is. What is the meaning of the minority report? What is its substance? What effect will it have upon the original report?

A VOICE. The effect would be that you would get something done. You can resolve, as you have been doing for a number of years, until the cows come home, without any effect. The effect would be to have Congress, now in session, take up the matter and amend the Interstate Commerce Law so that it will make it criminal and impossible to give rebates to private car lines, or to any one else.

MR. STEPHENS. I want to know what effect this motion will have here; whether it annuls any part of the report as made by the committee; whether your motion to substitute your minority report annuls the majority report, or not? That is what I am getting at.

MR. ANDERSON. I can enlighten you on the subject.

THE CHAIRMAN. The minority report, of course, could not take the place of the report of the committee. It can only be accepted as a minority report.

A VOICE. Mr. Chairman, the gentleman moved the minority report as a substitute. That is to be the report of this Convention. Now, if that should carry, that would destroy the majority report so far as the action of this Convention is concerned, yet it would still remain the report of three members of the Committee on Transportation.

GEN. JENNISON. Mr. Chairman, I would like to ask for information. I was absent when the report of the majority was being read. I want to ask if there were any resolutions offered accompanying the majority report?

THE CHAIRMAN. There were none.

GEN. JENNISON. Then it is his resolution, asking our members of Congress and the Senate to support certain amendments to the interstate commerce law which he cares to have passed here.

MR. ANDERSON. Yes, sir.

GEN. JENNISON. It seems to me we could get at it in some way, and let the reports come in and be filed, and then adopt the resolution accompanying the minority report, and I will make that motion when we get where there is not so much lumber in the way of making it.

MR. BERWICK. Mr. Chairman, do I understand that this committee has never met all together, including Mr. Anderson?

MR. ANDERSON. No, sir. I never was notified that I was on the committee. The first intimation I had of that fact was the receipt of a copy of the report, entitled "Report of the Committee on Transportation," from which I immediately presumed that the committee had been in meeting and had agreed upon these things, the inference being that I was desired to sign it. And so that this may not be misconstrued, I wish to say that I have been in Sacramento all summer, having been called up there, and I went to Suisun Friday night. Saturday, after I came into the office I found this report, and I called Mr. Stephens in Sacramento on the 'phone, and I told Mr. Stephens that I did not know I was on that committee and did not understand what he wished me to do. He said I was. He said he would be home all day Sunday, in Sacramento, and I could see him. The result was, on going to San Francisco Monday, I had an appointment at ten or eleven o'clock, and I could not see him Sunday. I was here Monday, but I could not see him. I have never had an opportunity of attending a committee meeting.

MR. BERWICK. Might I then be allowed to move that both the reports be referred back to the committee, requesting them to meet during recess, and bring their report back to us some time this afternoon. Would that be acceptable?

MR. STEPHENS. I wish to verify much that Mr. Anderson has said, and I wish to give explanation and emphasis to something he has not said. It does not include all that I said to him in the communication I sent to him at Suisun. I did not present it, sir, as the report of the committee. If you will read your communication you will see that it was to make suggestions, and final action of the committee was to be had—— (Calls of "Question, Question." Where is your letter? Where is my letter?)

A GROWER. Mr. Chairman, I understand there is a motion before the house to recommit. I raise the point of order.

MR. ANDERSON. I think the motion to recommit is perfectly in order, and I will be pleased to meet with the committee, and we will not take up the time of the Convention.

MR. STEPHENS. Mr. Chairman, I believe I have the floor; I have the floor for the purpose of making an explanation. I did not present this as a report—of course it was in form, for that matter—but I presented it as a draft of the report to be made to this Convention, and I asked him in the most courteous language which it is possible to command whether or not it met with his approbation; and if not, then any suggestion that he might make as to its qualification in any way, or addition or omission, would be entertained by the committee, and careful consideration would be given to any such suggestion. I also said to him over the 'phone, as he states, that I regretted very much that I did not know that he was in Sacramento, because, had I known it, I should certainly have consulted with him. It would not have been a proper thing to have called a meeting of the committee at Sacramento—gentlemen from Los Angeles and other localities—because it would be possible to meet here in San José at this time; and I stated to Governor Anderson that I was going down to San Francisco on the afternoon train on Sunday, that I would be pleased to have him go along on that same train—he did not go down by that train; that I was going to stop at the Palace Hotel, and that I would be there almost continuously, so that I would be accessible; also, that I was to come to San José, which would give us Monday evening and plenty of time for the committee to meet. I have been at the hotels, I have tried to meet Mr. Anderson, I called a meeting of the committee, Mr. Judd, Mr. Gordon and myself, and we would have been pleased to have met Governor Anderson. If there was anything tried to be avoided by myself and the other members of the committee it was anything like sharp practice, and that for the reason that there is no question that is to come before this Convention that so much interests the growers of the State and the people of California as does this question. Now we want a friendly discussion; we want to give every opportunity to every man and every grower to express his views upon this question, because that is all there is of it. Now, then, if Mr. Anderson desires to meet with the committee, I have no objection, and I will heartily indorse the motion that this report be recommitted, and that a meeting of the committee be held immediately after the adjournment of this Convention, or a recess of this Convention. I have no objection to that. I desire to meet him and know his objections, if any. (Question called for.)

THE CHAIRMAN. Then you understand that the motion is to recommit, and that the supporters of the majority and the minority reports meet together.

Motion carried.

THE CHAIRMAN. We will take a recess until 1:30 o'clock P. M.

AFTERNOON SESSION—SECOND DAY.

The Convention met at 1:30 o'clock P. M. President Cooper in the chair.

It was moved and seconded that all speeches on this subject of the report of the Committee on Transportation be limited to five minutes each, except those of the members of the committee.

Carried by a vote of 39.

Secretary Isaac read the report of the majority on transportation; then followed with the reading of the minority report.

Upon motion, duly seconded and carried, the reports were accepted and placed on file.

REPORT OF COMMITTEE UPON CO-OPERATIVE ORGANIZATION FOR MARKETING DRIED FRUITS.

The following report of the Committee of Fifteen, appointed at the last Convention, was submitted:

To the California Fruit-Growers' Convention for the Year 1904:

GENTLEMEN: Your committee, appointed at the last session of this convention, to prepare and put into operation a plan for the coöperative marketing of dried fruits, respectfully reports as follows:

Owing to the great distance which separated the several members of the committee, we found it impossible to hold as many meetings for the discussion of our work as we could have desired, but we have held three meetings, and very thoroughly considered various plans for organized marketing, with the result at the end of a session at San Francisco in March last, that we unanimously agreed upon the following recommendations:

That it is the sense of this committee that the fruit-growers of the State, wherever practicable, organize local associations for the preparation of fruit for market, and that these several associations then connect themselves with some selling agency to make sale of their crop at the best market rate, at such times, and for such prices as such agency, acting in conjunction with associate organizations, may deem best. In case no such selling agency is available or satisfactory, we recommend that they proceed to establish one by delegate representatives from each such local association.

Also, that we further recommend that all selling agencies composed of organized growers, unite by delegate membership to form a central selling and purchasing agency, by which the highest advantages in buying and selling may be secured, without, however, relinquishing any brand, trade mark, or other advantage, peculiar to each, but eliminating to the greatest possible extent injurious competition with each other in the market, and in every practicable manner extending the consumption of California cured fruits.

Also, that we disclaim any purpose to antagonize any interest by such recommendations, being fully aware that a large percentage of the business will remain to be done by established organizations. But we believe that when a considerable portion of the growers are thus organized, it will be possible to find a common basis of agreement with such interests by which market values may be sustained and regulated better than at present.

We further recommend that such centralized agency, at the earliest practicable moment, develop a plan for efficiently advertising California cured fruits, and placing them with the consumers at prices which shall provide for a fair average profit to the grower, wholesaler and retailer.

The following resolutions were also adopted:

Resolved, That we urge the State Commissioner of Horticulture to procure and publish all available statistics in relation to the fruit products of the Pacific Coast and competing countries.

Resolved, That a committee of three, with Mr. H. P. Stabler as chairman, be appointed to outline and put into operation a plan for increasing the consumption of the cured fruits of this State.

The chairman appointed on the committee with Mr. Stabler, Arthur R. Briggs and A. L. McCray.

The papers of the State very kindly gave wide publicity to these recommendations, but up to the present time we have heard of no locality which has taken action upon them.

It is very clear to your committee, that the losses to deciduous fruit growers, resulting from a lack of organization in marketing our dried-fruit products, are enormous, and are seriously threatening the general prosperity of all lines of business, unless effective action can be initiated soon, but it seems to us almost hopeless to expect the fruit-growers to form an effective organization upon strictly coöperative lines, so that we are moved to strongly recommend an alternative method of securing the desired organization of the market.

We, therefore, beg to report as follows:

We primarily recommend for your first consideration the representative system of coöperative action, which is based upon local associations, formed at all points where it is found convenient to assemble and pack fruit for shipment in car lots.

These associations should then be centralized, by creating an organization formed from the representatives of the several local organizations, which central organization should constitute a buying and selling agency for all of the local associations and should proceed to organize and put into effective operation the best approved methods of selling special food products, including the use of expert advertising, and other forms of influence to enlarge consumption.

Logically, these local associations should be formed first, but experience shows that it is extremely difficult to secure such local initiative, and therefore it seems essential to form some temporary promotive organization to cause the formation of a sufficient number of local organizations to give strength to the movement, which may then itself take up the work of extending the effectiveness of such coöperative action, by lending aid to organize all sections not yet included with it.

No one method of marketing the crop should be prescribed, but such central agency should be free to adopt such plans as conditions may require from time to time.

We regard the above plan as in all ways the best one, providing it can be made effective by the very general coöperation of the fruit-growers; but in case it shall appear to this convention quite improbable that it is likely to be generally accepted and acted upon, we recommend as an alternative method the following plan for a profit-sharing basis of organized marketing:

That a form of contract be devised by which each prune-grower may agree to sell for cash, on delivery, his entire output for the ensuing five years, at a basis price to be fixed slightly above the market price previous to the submission of the contracts to the public, and in compensation for thus giving control, such growers shall be entitled to one half of the net profits derived from packing and marketing such contracted products.

These contracts should be placed in trust until the control of a sufficient percentage of the crop can be thus secured to give efficiency to the movement, and until a company shall be formed able and willing to carry out the plans indicated by such contracts, viz: To organize an effective system for marketing all fruit products of the Coast, beginning with prunes, providing sufficient capital therefor, and submitting to an annual audit of its business by a reputable auditing company, in order to determine the basis for declaring a dividend, consisting of one half of the profits of the business resulting from such contract fruit.

In the opinion of your committee, such a profit-sharing basis would yield to the growers returns far beyond any which can be hoped for without effective organization of the market, and still yield to the capitalist who shall put his money into this public service enterprise, a very satisfactory profit.

Very respectfully submitted.

(Signed:) A. R. SPRAGUE.
A. L. McCRAY.
F. H. BABB.
S. G. RODECK.
H. P. STABLER.
A. D. BISHOP.
B. F. WALTON.

PRESIDENT COOPER. We will pursue the same course as we did this morning: after all the papers are read, then they will be open to discussion.

THE BENEFITS OF ORGANIZATION.

By F. H. BABB, of San José.

Nature is broadly divided into two great kingdoms—the inorganic and the organic. The first comprises the crude, raw material of creation, inert matter. When the atoms of matter are placed in symmetrical relations to one another and a vital principle binds the whole into one, we have the organic or organized. The highest type of organized life was reached when the material atoms were formed into the human body, into which was breathed the breath of life, and man became a living soul. Each particle of matter assumes definite relations to each other particle, and becomes circumscribed in its location and range in order to enter into the higher life.

When we have reached man, the top of the organic scale, we are not at the end. There is an organization of mind as well as of matter; of men into society governed by laws. No doubt the troglodyte, each in his separate cave, was less restrained and more untrammeled in his activities than his civilized descendant is. But his life was in danger whenever he left his rocky fastness in search of food, and he was always upon the verge of starvation. Men combined at first for defense, then for the development of agriculture, manufactures, the arts, and all that exceedingly complex thing which we call civilization.

Political organization was compulsory rather than optional in most of its successive stages. In the feudal period, the vassal must have the military leadership of his suzerain and the protection of his castle in time of war, which was nearly all the time, no matter how great a price in servitude he paid for it. And as the nobility were compelled to yield up their autonomy to the king in the building of the nation, it was always reluctantly, and often at the point of the lance.

While this political organizing was necessary for the organized, it was largely done in the interest of the organizer. This has not entirely ceased to be the case even now. When the people sought a larger voice in the management of the government, and a greater share in its benefits, there was again war, and the modern republic was born. This could not happen until the idea of representative government had been developed, and the small subdivision saw the necessity of yielding its power to the central authority. How slowly and reluctantly this was done, our own history shows. The war of the rebellion was finally necessary to decide whether this was a nation or a loose federation of sovereign States

The same development has taken place in manufactures. The individual artisan has been gathered into factories under competent management, and small establishments consolidated into larger, until in the fullness of time the trust was born, and not without fierce competitive wars, and under the pressure of stern necessity. Transportation became organized in the same way. So crudely did railroading start, that it is said that the question whether the conductor or the locomotive engineer was the supreme authority on a train, was settled by a pugilistic contest. The short local roads, calling for the constant rebilling of freight, and rebuying of tickets at their termini, have given way to the great transcontinental system, but not without war and suffering.

Industrially again, there was a revolt of the organized against their organizers, and it took the form of the labor union. The workingman felt that he was not personally getting the benefit of organization to which he was entitled, so he organized to obtain it. He did it often reluctantly, giving up his individual independence, and submitting to the dictates of his union officers only because of stern necessity. The union long meant war, and only war. And when truce was struck, wages were raised for the organized workman, prices were raised by the organized employer, and the unorganized general public paid the whole bill, and is still paying it.

Trade seems slow to organize in order to cut out unnecessary expenses. It was thought perfectly proper, in the Middle Ages, that the barons should sally from their castles on each hill top, and levy tribute on the pack train of the merchant as it passed, so that the consumer paid extortionate rates, and the producer obtained little. And even yet, the long line of middlemen between producer and consumer keeps them too far apart, to their mutual disadvantage. The Rochdale system, which is one of the most marvelous commercial developments of the age, remedies this for the consumer, but is yet of little help to the producer.

Is there no hope for him in organization? The tiller of the soil feeds and clothes the world. But those who elaborate and market his product enjoy the lion's share of the proceeds. He can get no more by asking for it. He gets almost anything else handed out to him. He is praised for his virtues, called the conservative force of the country, the balance-wheel of the republic. He is encouraged to work harder, is told that most great men began life upon a farm, and left it as soon as possible. Almost any professional or business man is glad to give him *agricultural* advice free. The corner groceryman will cheerfully tell him how to run his farm, but refuses to give him more per dozen for his eggs. The line is drawn just there. No one obtains an increased price for his product, whether labor, or potatoes, or coal oil, by simply sanguinely hoping for it, or pathetically pleading for it. He must be in a position to demand it. He can only place himself in that position by effective organization. Until he does so, he is helpless, as an individual, to obtain a fair price for his products; meanwhile, he must pay, either directly or indirectly, the increased prices which wageworkers, manufacturers, and transportation companies are able to demand by virtue of their organization.

When he organizes, he must not expect an exorbitant price, and be disheartened and resolve to quit because he does not obtain it. Even the Standard Oil Company and the Stonecutters' Union are unable to advance prices and maintain them permanently much beyond the point where remuneration ends and highway robbery begins. Economic laws forbid. It will not be necessary. For prices can be kept at a steady, paying figure whenever the trade realizes that a strong, permanent organization is behind them. When the producer is his own packer and seller on a large scale, he can reduce administrative expenses and practice economies, as all other departments of activity have found. He can advertise and extend his markets, and feel that his industry is growing up with the country. And thus the specter of overproduction, which has so long haunted him, will be banished to the limbo of industrial chaos, where it belongs. He will not spend days running from one buyer to another, finding them in substantial agreement, and spend nights in wondering what the market of the world would justify him in asking—if he could get it. He will attend to this in his organized capacity, through the servants he elects to do it, as able and as fully posted as any one. He will have his nights for slumber, and may spend his days at home, enjoying the society of the scale bug, the codling-moth, and the peach-root borer.

The prune-grower will no longer find that the speculative packer has sold his crop short, below the cost of production, while still immature, and compels him to fill at still lower rates, that the middleman's profits may be kept up, while the grower is reduced to poverty and despair. Then cut-throat sellers will fill their shorts at their own expense. He can know that his goods are honestly and properly packed, so that markets are not ruined by attempting to make a fifty prune grade as a forty, though it spoil before the box is opened. The commercial curse of the age is the excessive watering of stock. A large organization can secure better rates and service from transportation companies, or know the reason why. The benefits of such organization are moral and educational as well as merely financial. The man on the farm will learn to come out of his shell and act with others for the benefit of his class. Too often he distrusts his neighbor, considers him in the light of a rival or competitor, rather than one who should coöperate with him for the same ends. If farmers were organized, they would no longer wait for sporting clubs in the cities to tell them, through the legislators, which of the livestock raised on their farms and fed and fattened on their crops shall be killed and carried off by city visitors, and when it shall be done. They would no longer consent to bear the greater part of the burden of taxation, while millionaire owners of personal property are practically exempt. The French revolution was brought on by the exemption of the nobility from taxation. Then the whole trend of public education would not be away from country life, and a staff of educators, some of them of national reputation, would not be compelled to teach agricultural students in dilapidated sheds at the State University, while embryo doctors and lawyers are palatially housed.

The National Grange compelled the rural delivery of mails, and united action will continue to add the facilities of the city to the enjoyments of the country. The labor unions are not a tithe as strong numerically as the farmers, and yet see how they fill the public eye and ear. When they make a demand, the politicians stand and deliver. There are States where nearly all the farmers, and some of the State officers as well, belong to the Grange. Their peculiar interests do not often suffer. In the Middle West farmers' organizations have broken up oppressive elevator trusts, and replaced grasping telephone monopolies. It might be thought that California, especially the orchard sections, formed an ideal field for organization. The orchardists are a most enterprising class, the pick of the land beyond the Rockies. They have come from all other occupations, have been lawyers, doctors, business men, with broad and varied experiences, and familiar with the benefits of organization in other walks of life. But they have been too prosperous. It is said that "Jeshurun waxed fat and kicked." And the satisfactory returns from orchard property in past years have tended to develop the critical rather than the assimilative faculties. History teaches that combinations have generally been made reluctantly, at the spur of necessity. It is not enough to have an intellectual appreciation of their benefits. The will must be inclined toward mutual trust. Representatives of coöperative organizations have met to form a central agency, and the eloquent and unanimous commendation of the plan would seem to make its success certain. Not a dissenting voice would be heard, until the time came for actually signing a contract. "And then, with one accord, they all began to make excuse." They were like the Irishman and the prohibition law. He was in favor of the law, but agin' its enforcement.

Prices this year indicate that the time for organization is at hand. A brutal old Englishman called kicking a man down stairs, giving him a hint to leave. Prunes at 1¼ cents are that kind of a hint to organize. The failures of the past are no reason for abandoning effort, for most permanent success is built upon failure, and most organizations have been born in war, have had their storm and stress periods, have made stupendous mistakes, and done penance for them in sackcloth and ashes.

WHY FARMERS SHOULD SUPPORT THE GROWERS' CO-OPERATIVE AGENCY.

By A. T. J. REYNOLDS, of Walnut Grove.

Coöperation being one of the leading topics of this Convention, it will be in order for me to say a few words on the subject "Why Farmers Should Support the Growers' Coöperative Agency."

In order to understand what the Agency is, and why it was established, it will be necessary to go back a few years to explain the condition of the San Francisco market.

The Sacramento River farmers raise large quantities of fruit and other produce, a portion of which is shipped to the Eastern markets, but the great bulk is forwarded to the commission houses in San Francisco for sale. The returns from those houses were very unsatisfactory. Charges were excessive, and combinations were formed by which the various houses would agree upon the price to be returned to the farmer, irrespective of sales.

In 1902 the fruit-growers held a meeting at Walnut Grove to consider the situation, and endeavor, if possible, to improve existing conditions. In time an organization was effected which resulted in the incorporation of the Sacramento River Coöperators, and its officers were directed to establish a house in San Francisco for the sale of our products. About June 1, 1902, this house was opened under the name of the Growers' Coöperative Agency, it being the intention of the founders to make it a representative house, and to invite other fruit-growers' associations to work with us and assist in building up a large business, taking a share in the management, so that farmers of all sections could be assured of getting honest returns for their produce and the cost of selling such produce be materially reduced.

In the beginning it was not considered good policy to antagonize the other houses or to cause any unnecessary friction, so the management was instructed to charge the established rate of commission, and also to apply for membership in the Commission Merchants' Protective Association, in order to guard the house against irresponsible or unscrupulous dealers. The application was rejected in that and other trade associations, on the ground that, if our house was successful, our patrons would get a rebate on commissions, or in plain terms the farmer would get the benefit.

The bitterness of the fight waged againt us is a matter of history. The old-line commission houses fought us from the start, refusing to buy from or sell to the Agency, or to any one who patronized it in any way. From the fact that the retailers have to keep a great variety of goods in their stores, for which they usually draw on a dozen or more wholesale houses, it can readily be seen that we could not protect our customers to the extent of supplying all of their needs, and the boycott against us was therefore very effective.

Legal advice was obtained and suit commenced against the Commission Merchants' Association, and we were promised that the case would come up for trial within two months, but it was delayed for over a year and eventually was withdrawn. In the meantime our customers, being afraid of the boycott, kept away from the store. Consequently the business was running at a loss, so that some of our weak-kneed members grew discouraged and withdrew their support, and even our manager advised closing the house. Fortunately, the most of our members were loyal and put their hands into their pockets and advanced means to continue the business.

A new manager was appointed, and in the spring of 1903, at the commencement of the second season, a meeting was held at Courtland, and when the farmers learned how the house had been treated they rallied to its support and in less than five minutes $3,000 was collected to be applied toward carrying on the Agency.

This proved to be the turning point, and from that time on success was assured. The commission men, realizing that the Agency was there to stay, and knowing that the Woodward bill, to prevent boycotting, had become a law, withdrew their opposition. The Agency has since stood on its merits, and, as it became better known, farmers from other sections shipped their produce and helped the cause to an extent that was highly appreciated.

When the Growers' Coöperative Agency started, we were unable to secure suitable quarters for the business. Last fall, however, we were more fortunate and have rented the premises at 425, 427, and 429 Front street, in a fine location, close to the main arteries of trade, where we have excellent facilities for the display of our goods.

So far, the Growers' Coöperative Agency has not been advertised to any great extent, as the promoters thought best to follow Davy Crockett's advice, " Be sure you are right, and then go ahead." At the start too much trade was not considered desirable, but by gradually building up a business our salesmen could accommodate themselves to handle a larger volume of goods to the best advantage. After the experience of three seasons we can now confidently assure shippers of good returns. The Growers' Coöperative Agency is now incorporated, and invites farmers from all sections tributary to San Francisco to organize fruit-growers' associations, take membership in the Agency, support the house with your consignments, take a voice in the management, and make the Agency what it was intended to be—a representative house of not only one section, but of all sections of the State.

From the Sacramento River, the Agency can always command large consignments during the summer months, but as we raise little winter produce excepting beans, which are mostly sold on the ranch, more business is desirable in the winter and early spring.

You can readily understand that a business of $300,000 can be conducted with but comparatively little more expense than a business of $100,000 would require; the rent, management, and larger items of expense would be the same in both cases, while additional bookkeepers, porters, etc., can be secured at low salaries. The profits would also largely increase, which profits would be divided among the different associations having membership in and supporting the Agency, in proportion to the value of their shipments.

We have all heard, time and again, of the advantages to be derived by coöperating with each other, and we believe there is merit in the principle. Let us make up our minds to commence right now and give coöperation a fair trial. We attend these fruit-growers' conventions to learn something, hoping to profit by the experience of others. We all learn and get new ideas. If we put the knowledge thus acquired to practical use we improve our conditions and derive lasting benefit. On the other hand, if we fail to profit by the suggestions thrown out, we might as well have remained at home.

We all agree that the expense of selling our products is altogether too high, and is bound to be so just as long as we support a small army of commission merchants and middlemen to handle those products; but if we unite our forces and join with the Sacramento River farmers in supporting the Growers' Coöperative Agency, making it what I believe it is destined to be—the leading fruit and produce house on the Coast—the business will be so largely increased that the cost of selling will be so greatly reduced that the difference will yield a handsome profit.

Being a member of the Agency will give you a voice in the management and in directing the policy of the house, and you at all times will have access to the books, a privilege which no other commission house will grant you, unless I am greatly mistaken.

Now, I do not wish to be understood that as soon as you join the Agency all will be plain sailing, or that there will be no obstacles to overcome, or that you will get higher prices than your neighbor on every shipment, or that the old houses are going to stand idly by and lose your trade without a struggle. You will very soon find that other houses are quoting higher prices than you obtain, or than the goods brought, in order to get you again in their clutches. You will find their agents spreading all kinds of reports against the Agency in order to get you to withdraw your support. This has been our experience on the Sacramento River, and will be yours, unless I am greatly mistaken. In these days of keen competition, it requires a whole lot of energy and careful management to build up a successful business—those having grit, determination, and good staying qualities will succeed, while the timorous and weak-kneed will go to the wall. It is simply a question of the "survival of the fittest."

I do not wish to be understood that all commission men are dishonest; far from it. There are a number of honorable exceptions who are engaged in the business, whom I believe were pleased when the boycott against the Agency was stopped; but the average farmer has not the time or inclination to light his lantern in broad daylight, like Diogenes of old, and search through the market places for an honest commission man.

The Growers' Coöperative Agency has been of great benefit to the river and other farmers, particularly to those who are not with us, as the commission men have returned in many cases higher prices than the goods sold at, in order to cause our members to become dissatisfied and withdraw from the Agency. I might add, without comment, that some of the houses that fought us most bitterly at the start, are no longer in existence.

A careful study of the progress of the Agency has shown us many things. We find that as we are able to effect a gradual improvement in our methods the results are more satisfactory. As our support becomes more general and our shipments represent a greater diversity and a better supply, so does our trade increase and the greater benefits accrue to each line handled. It is obvious that with five hundred customers coming to our store every day, the chance for selling our goods advantageously are better than when we have but half that number. It is plain, therefore, that we should broaden our field of action, and the faster we are able to do so the more satisfactory will be the returns to our shippers. As we build, we must build solidly, however; our trade must increase with our shipments, and above all there must be that careful attention to the most minute details, without which no business can succeed.

We have been able to follow the beneficial results that come from the increasing strength and coherence of our organization. We find that by reason of the close relation existing between the management of the house and the individual shipper, and the confidence of the one in the other, many improvements are effected in the pack and condition of the goods reaching the market. The Agency is in a position to point out any fault in the packing, and to indicate to the shipper the demands of the trade in this regard. We have also been able to improve upon the method of keeping the shippers thoroughly informed as to the prices, etc., and in this regard I would state that we are giving this subject the most careful study, with a view to still further improvements in future. It is of the highest importance that a thorough and comprehensive system be devised for this purpose, as it is by such means only that the shipper is able to take advantage of market variations and to either hasten or divert his shipments, as the situation may require.

In localities where return boxes are used, we have found it possible to return these empties much more promptly than has ever been done before, and in this regard also we are planning still further improvement. Our complaints and requests are listened to by the transportation companies much more respectfully than in the past, and we find that it is possible to outline many improvements which can be successfully carried out in this department.

The by-laws of the Growers' Coöperative Agency are practically the same as those of the California Fruit Exchange, whose success in marketing fruit in the East has been so marked under the able management of Mr. A. R. Sprague, and our directors thought they would make no mistake in adopting them, with what few changes were necessary, particularly as they had stood the test of experience.

In conclusion, I will present a few reasons why farmers should support the Growers' Coöperative Agency.

It is a house firmly established and doing a successful business, owned and controlled exclusively by farmers, and has the confidence of the trade.

It makes prompt and honest returns to all shippers who take advantage of its facilities for selling their produce.

It is in an excellent location and offers superior advantages for the display and sale of products.

It is under competent management and employs efficient and experienced salesmen, bookkeepers, etc., which insures prompt attention to every detail.

All profits that may accrue from the business will be divided pro rata among its members, in accordance with the amount of their shipments.

I will add that our manager is under bond, which can always be increased as the business grows, and will give as reference the First National Bank of San Francisco.

AGRICULTURAL ORGANIZATION.

BY A. R. SPRAGUE, OF SACRAMENTO.

What are the objects of business organization? Among them I suggest:

(1) To secure the orderly dispatch of business, thus preventing the waste which results from interferences.

(2) To concentrate business in order that, without extravagant cost, efficient employés may be secured, and other business facilities obtained.

(3) To prevent destructive competition.

(4) To concentrate power sufficient to secure proper grading of the product, thus protecting the market from poor or fraudulent material, and on the other hand protecting the consumers from excessive prices; also to secure such extension of the market as can only come from efficient advertising. In short, to buy low and sell high and to manufacture and handle at the lowest possible cost.

These are the main purposes of all organizations, whether in transportation, in manufactures, merchandising, of labor, or in agricultural pursuits. In other lines than the last it is no longer a matter to be debated. As well might we discuss whether or not we should use the steam engine or electricity.

It was long ago decided in those various lines that organization was not only desirable, but absolutely essential to their business survival. Point me to any instance of lack of organization, and I will show you an industry which is the prey of all others, in which the rewards of effort are uncertain and its whole outlook discouraging.

These statements are so generally admitted that I am not warranted in further enlarging upon them.

The only form of industry that still remains practically unorganized is that of agriculture. This is the most fundamental of all industries, since from it all others are derived. Let agricultural production cease for a few weeks and all the wheels of commerce and trade would stop. Merchants, manufacturers, bankers, with all their marvelously efficient organizations, would find nothing to do, should the farmer cease to use his labor in transmuting the dull clods into the varied forms of raw material from which the rest of the world lives. He is the primary wealth-producer, and therefore whatever promotes his well-being should deeply concern the rest of society. It must, therefore, be a matter of great solicitude to all business interests, that the farmer is at so great a disadvantage for lack of organization, and a way should speedily be found to change this condition.

The fruit interests of this Coast give a most impressive illustration of the losses to the whole community resulting from a lack of effective business-like organization of the industry.

In making this statement I except the Southern California Fruit Exchange in the south and the California Fruit Exchange in the north, as both of these organizations have for years been in successful operation, to the great advantage of their growers coöperating, and indirectly helping all fruit-growers.

Briefly reviewing the present custom of selling our dried fruit product, I take the case of prunes, as affording a specific illustration of conditions that normally affect the whole line of dried fruit products; for if in any particular season reasonably good prices prevail for any of the other dried fruit products, it is found to be due to an excessively short crop. We can well remember when with but a moderate crop of peaches, apricots, or raisins, the prices fell below the cost of production.

Prunes are now first sold by growers to packers, who mostly buy upon a basis price. In this manner the grower is at every disadvantage, for in counting the number of prunes per pound a deft and unscrupulous buyer can easily make it appear that prunes that easily average 50–60's seem to average but 60–70's, by which bit of juggling he gets half a cent per pound advantage, so that while the grower appears to be selling at 1½ cents per pound basis for the four sizes 60's to 90's, he is really selling for but 1 cent per pound. Again, the packer who buys without grading estimates far more accurately than the grower the quality of the prunes, for he makes a hundred times as many such estimates. But this evil, although serious, is but the beginning of losses which present market conditions make inevitable. More than a hundred packers, great and small, seek to sell prunes through hundreds of brokers. To these brokers, who each usually sell for several different shippers, samples are sent with prices quoted. In any large city each jobber is thus solicited by many brokers, each seeking to effect a sale. No one knows better than the broker that the quick and sure way to effect a sale is to offer at a lower price than do his competitors. This cut is sometimes made by giving to the buyer a part of his brokerage, or by giving a higher grade of product at the current price, or by an open or secret cut in price. The jobber frequently asserts that he has been offered a cheaper price by a rival broker, and this fact is at once wired back to the packer upon the Coast, to secure permission to meet the cut. Very often these assertions are wholly false, simply a ruse to secure a real cut. The result is inevitable; among a hundred different firms, each anxious to sell prunes, some will be found who will make a concession in price to effect a quick sale; this is followed by others, until the price so declines as to disgust every jobber who has already bought, as well as to warn from buying those who were expecting to do so. If the wholesaler has been able to sell freely to the retailer, the latter, too, participates in the general loss, and he, also, is "disgusted with prunes," and will have no more to do with them than he is absolutely obliged to.

When this sluggish state of the market has been thus produced, the brokers, who also sell many other articles, find that much more money can be made by vigorously pushing the sale of some of these things—dried apples, rice, canned goods, etc.

Thus we see the whole field of selling activity slowing up at a time when it should be most active.

As if this were not enough with which to afflict the industry, the situation is greatly aggravated by shipment of prunes of poor quality—either originally defective in sugar, or poorly cured, so that they have fermented or suffered other injury. Because they all look black and are packed in boxes marked choice, neither the dealer nor consumer readily can detect their poor quality, but when cooked they do not taste good, and the family that has bought them swears off from prunes for a long time. Now, we as a nation are eating hardly more than one pound of prunes each per year, and such experiences with poor prunes tend seriously to lessen even this light consumption.

Contributing to the general uncertainty is the custom of selling futures before the crop can be forecasted, thus arbitrarily making prices unwarrantably low in years of scarcity, since it is almost impossible to raise prices after they have been fixed by extensive offerings of futures. More and more, too, the Eastern wholesaler is insisting upon shipment of prunes in original condition, thus increasing the probability of manipulation of the fruit to the disadvantage of the consumer.

There is nowhere any effective control of the business of selling. The big packers are as helpless as the small ones, and the situation in every way illustrates the evils of a lack of business organization.

Contrast with this the organized methods by which other lines of special food products are sold.

One firm employs three hundred men in the business of pushing its products into consumption. The whole of the United States is divided into districts, with an agent in charge of each one. Subordinate to this district agent is a corps of salesmen in active service and reporting daily to the district supervisor. Each of these superintendents likewise reports to the general sales manager at the head office. This firm spends from one to two hundred thousand dollars per year in advertising the desirable qualities of their goods and explaining how much healthier all would become by using this product—never losing a chance to get a new consumer. They fix the price at which the product is to be sold to the consumer at a point which leaves a fair profit to producer, wholesale and retail dealer, and yet is not so high to the consumer as to prevent the general use of the article by all classes. In case the demand for their goods diminishes in any territory, they at once seek to know the reason and to fix the responsibility for it, and then bring the whole power of their organization to bear upon the recovery of the lost business.

They have annual conventions of their salesmen and supervising agents to compare experiences and advise together for the future advance of the business. They do not hesitate to pay enough to secure the services of the best men to be had for such work.

And this is not an exceptional instance; it is the method commonly used in selling almost all lines of manufactured goods.

Picture the influence upon our dried-fruit and raisin industry, of such an organic system for selling the products. Instead of waiting for something to happen to make prices recover, think of *making things happen* by the pressure afforded by three hundred efficient salesmen wholly devoted to our business!

Think of being able to safely advertise our product because we control the grading and packing and so can "make good" our assertions of quality!

Think of being able to plan for the expansion of consumption by reaching the consumer in convincing ways and to know pretty nearly what our product will be worth several years ahead!

Economy is only possible with organized control, and every efficiency likewise depends upon it.

Some people conceive that such systematic packing and selling of our products would be a difficult achievement. It is always more easy to achieve a desired result in an orderly way than through disorder and confusion.

We may safely say that if ninety per cent of the product could be under a single administrative control, the destructive competitive prune offerings would cease; utterly bad prunes would be kept out of the market, and uniform grades and an honest pack could be maintained; a largely increased consumption could be secured by extensive and expert advertising and up-to-date methods of selling; so that as a result of all these better conditions a market would easily be found for even a large increase beyond our present prune product at double the present price to the grower.

Thus in prunes alone there would be saved to the State over one and one half million dollars; add twice as much more for raisins and other dried fruits, and thus the aggregate would exceed four million dollars which would be saved, but which now seems likely to continue to be lost to the fruit-growers of the State for lack of organization. Surely no other one thing could so powerfully act to promote the prosperity of every commercial interest as this. What a field for efficient work for the one hundred and forty-six promotion organizations soon to meet in State convention at Los Angeles!

Doubtless there is not a single fruit-grower who will hesitate to assent to all of the foregoing; but—and here we are right up against the fundamental difficulty—they say growers will not organize. They have been so discouraged by the failure of the system of coöperation attempted by the prune- and raisin-growers that they are utterly disheartened and disgusted. Many doubtless would be willing to try once more and this time with a thoroughly tested and approved system; but too many others would want to wait and see if it succeeds before they are willing to join (although that very act from them is essential to its success), and so many others hope to profit by its success by remaining outside, that it is not probable that a controlling percentage could be secured upon a strictly coöperative basis.

Accepting this, then, as one of the facts to be regretted, but yet acknowledged, I suggest that most of the objects sought may be accomplished by a modification of the coöperative plan—a profit-sharing basis.

We may, perhaps, safely assume that the prune-grower, even if unwilling to do business for himself by coöperative methods, will yet be willing to aid in saving the industry, if he can do so absolutely without risk, and at the same time can be sure of getting something more per pound for his prunes in cash on delivery, than now he can reasonably have any hope of getting for the next few years. If the prune-growers will contract to sell their prunes for a period of five years to a corporation to be formed for the purpose of packing and marketing them, receiving from such company, as a consideration for thus giving control for this period, dividends from such profit-sharing corporation amounting to one half of their net profits—if the prune-growers are willing to do this much for themselves, I feel assured that public-spirited citizens can be found with sufficient capital to successfully work out the redemption of the dried-fruit industry of this Coast—first for prunes and then for all the rest. It may be urged that no agreement could be reached as to price, but it would seem that if growers could be sure of getting even a little more than the present price, together with each his fair share of the gains resulting from such organized selling, they should be content. The idea of a long-term contract is familiar to Coast growers, because of the custom of the wine organization, as well as of the canneries, and the plan has been found very satisfactory to both the grape-producers as well as those who grow cannery fruit. We well remember that the state of the wine grape-growers, previous to the organization for selling the product, was most desperate. If, then, they were willing to give control without consideration beyond the market price of their grapes, how much more willing to do this should the prune-grower be, if, without investing anything, he can arrange to participate in the profits of the business equally with those who risk their capital and undertake the stress of managing so large an undertaking? It may be urged that the company would so manage as to absorb profits in obscure ways so that there would be no dividends.

To this it may be answered that doubtless men could be found to act as stockholders and directors in whose character the people of California already trust, and, further, that a yearly audit of their affairs by a public audit company should be provided for.

Of course no large business could be conducted without a basis of confidence between the contracting parties, and the instances where a group of men have abused such are very few.

The contracts should be held in escrow awaiting the signing of a controlling percentage of the crop and the formation of a company able and willing to carry the plan to a successful issue.

All of the details involved in the operation of such a plan could easily be worked out. No fundamental difficulty exists, except the possible unwillingness of the prune-growers to give the necessary control. If once it is put into effective operation it will naturally invite the participation of all other California cured-fruit interests, and would suggest a method available for all other lines of agricultural production, subject, of course, to modifications suiting the varying conditions peculiar to each industry.

STUMBLING-BLOCKS IN THE WAY OF CO-OPERATION.

By C. D. HARVEY, of San José.

When asked by your Secretary for a paper on coöperation, it occurred to me that so much had been said and written upon this subject, and so little accomplished, that the effort would hardly be worth the paper upon which it was written.

A second thought, however, suggests that the consideration of some of the stumbling-blocks which have defeated coöperative efforts would be profitable to us in avoiding the things which occasioned failure in the past and in building upon experience rather than theory in the future.

Fully appreciating that stumbling-blocks are offensive, and that the mention of men's weakness or wickedness is never kindly received, I hesitate between an apparent acquiescence in a popular policy or strenuously advocating an imperative duty. The situation is expressed by John Bunyan's graphic lines:

> Well, when I had put my ends together
> I showed them others, that I might see whether
> They would condemn them, or them justify.
> And some said, let them live; some said, let them die;
> Some said, John, print it; others said, not so;
> Some said it might do good, others said no.

Believing, however, that the present situation demands facts, expressed in direct language, I submit the following for your approval or disapproval, doing what in my judgment a loyal citizen should do for his fellows: namely, do that which is for the greatest good to the greatest number, regardless of selfish interest or the criticism of selfish men.

When coöperation brings direct personal gain to the individual, coöperation is as easy as rolling off a log, and springs up like the mushroom after a summer shower; but when it means individual or personal inconvenience, it requires effort and self-sacrifice on the part of the individual maintaining coöperative actions. "The greatest good to the greatest number" must be the principle which prompts each participant, if it is to become a success.

Coöperation, as defined by Webster, is, "Acting or coöperating jointly with one another or others, to the same end."

Two requisites are essential to constitute coöperation: First, joint action, one with another; second, acting to the same end, with no antagonistic or diversified interests involved.

Unless action be directed to the same end, it is like a truth half told, it is a lie, and a libel on the word coöperation. As construed and exemplified by designing and unscrupulous men it has wrecked more fortunes, blasted more hopes, and destroyed more confidences among our rural communities than any other word. It has so often been a cover for fraudulent double-dealing that all naturally ask, "Can any good come out of coöperation?"

Looking beyond the narrow limit of our present experience in coöperative efforts, history proves that coöperation is the handmaid of civilization, for where coöperation begins, there barbarism ends.

The absolute right of the individual, namely, the right to do what one pleases, is most fully exemplified in savage life, but is brought under restraint when communities coöperatively establish laws for the mutual benefit and protection of all its members; hence the law restraining what is termed the absolute right of the individual, from doing an act which injuriously affects his fellow, extends and enlarges the liberties of all the other members of that community. In the same manner coöperation in civilized society protects the weak from the exactions of the strong, and the lack of such protection leaves the weak at the mercy of the strong and unscrupulous.

This applies to financial as well as physical inability, and is strikingly illustrated in the prune industry, where prices primarily are fixed by the grower when for financial reasons he is compelled to accept the first offer made for his product. Here protection to one is equally a protection to all.

This principle must be recognized under whatever name it be called, whether it be legislation or coöperation, before prosperity will smile upon the prune industry again.

Having defined the mission as well as the meaning of coöperation as a theory, let us turn to the practical side as it affects the agriculturist.

Here I am at a loss where to begin or what to say. Spread out before me is the great ocean of the world's activities—a restless, surging, unsettled mass; currents and counter-currents on every side, a strong undertow beneath, shifting winds, and hidden rocks covered with the wrecks of coöperative efforts of the past to be avoided, no chart or compass to direct, no fixed star of successful coöperation from which to take our bearing, nothing but the failures of the past to guide our coöperation ship in the future.

Mining, manufacturing, commerce, and transportation, with hundreds of smaller activities, are in the far front. The greatest of all these industries is agriculture, yet it is the least in influence and power as a political or commercial factor. It is a servant of those who serve, and receives less reward for its labor than the laborers it employs. Why is this?

Organization permeates every department except this. As a consequence, the agriculturist is a prey to every predatory combination that coöperates against him, from the wage-earner to the all-powerful transportation companies. And this brings me to my subject, "Stumbling-blocks in the way of coöperation as experienced by an organizer."

Two years ago, from the seclusion of a foothill ranch in Placer County, I, for the first time attended the State Fruit-Growers' Convention. I stopped at San Francisco on my way to the Santa Clara Valley, where I was to labor as State organizer for the Patrons of Husbandry. Seven months of successful work opened my eyes to a more important field than organization for fraternal fellowship alone. Mortgaged homes, rapidly depreciating lands, and discouraged and disheartened growers attracted my attention, and directed my efforts toward a work, where I came into close touch with the growers of the Santa Clara Valley, as well as secured an intimate understanding of their conditions and necessities.

Among the many obstacles to be met in coöperation I mention only such as have been most apparent in my experience, not presuming such to include all, or even the majority of the stumbling-blocks to be encountered in the highway of coöperation.

Selfishness stands at the very gateway, and if taken as a companion will bring disaster as surely as water runs down hill. This has been a rock upon which more coöperative organizations have been wrecked than almost any other—and why?

Speaking from my experience in this valley I can safely say that in the prune industry, nine out of every ten are selfishly waiting for some other than himself to take the initiative, and as soon as prices begin to advance, quickly step around the corner, sell to the speculator at a slight advance and demoralize the market, leaving the coöperator to hold the umbrella while he profits by the efforts. This is called coöperation, where nine tenths are a menace to every effort of the small minority to maintain a reasonable price. Nine to one practically coöperating with the speculator against coöperation, and then they wonder why coöperation is not a success.

This applies to associations as well as individuals. The unwillingness of one organization to join in a general coöperative movement has proved an effectual barrier to the coöperative effort of an entire community. The past season furnished a striking illustration of this, when all the growers' associations except one having practically agreed upon a plan of coöperation, it was defeated by this single association's refusal to coöperate, unless given the control of the united associations. This refusal resulted in the abandonment of the plan, which could not be carried out under such conditions, and the old rate-cutting plan was restored and reinstated to demoralize the markets and discourage the growers.

Another subtle and dangerous factor operating against coöperation is insincerity (a twin sister of selfishness). Insincerity is a big stumbling-block in an organization's path. It appears under a multitude of forms. Not being what one seems to be; pretending to do what one never does or never intended to do; the doing of things which one agrees not to do; the making of promises with no expectation or intention of fulfilling, are some of its meanings.

Coöperation can no more exist amid such surroundings than a fish can live on land, or a prune-grower raise prunes at the bottom of the sea, for they are antagonistic in every respect to the spirit of coöperation.

Selfish motives concealed under insincere management beget distrust, distrust destroys confidence, and coöperation without confidence is at best an armed neutrality, where each individual coöperator is a competitor against his fellow, guarding his individual interests as jealously as any non-coöperator.

Such coöperation is a farce and a travesty on the word coöperation, for the harmony of action ceases when the individual interest becomes competitive; and when each grower's effort is directed to himself, unity of action is impossible. And this is most apparent in organized associations wherever a general coöperative movement is attempted, for the failure of any single representative to fulfill his agreement with his fellow coöperators destroys and overthrows the coöperative efforts of the entire community. The effectiveness of coöperation is destroyed when insincerity appears, as has been experienced in the past season in the attempt to maintain prices on prunes, when the breaking of one pledge by one individual broke the bands which held the growers together.

The failure of the former movements in this direction of coöperation has discouraged the growers, and ninety-nine out of every hundred point to the California Cured Fruit Association as conclusive evidence against coöperation. This association should be classed among those which were organized ostensibly for the growers, but in fact controlled, managed, and manipulated by those not for the grower; therefore it is unnecessary to mention this failure, except to say that its discouraging influence will be felt throughout the present generation, and will be resurrected whenever it will serve to frighten timid growers into line to sell at ruinous prices and prevent organization.

This, with lesser organizations called coöperative, where dividends are absorbed in salaries and in paying interest on capital stock until the growers' dividends have become an unknown quantity; where increment from processing has entirely dropped out of the statement of account to the grower and has no place in the annual report; where the association, like a two-edged sword, cutting either way, has cut the grower as cruelly in the hands of his own managing board as in the hands of the packers—those are powerful influences in the way of coöperation over which we are stumbling to-day.

To rescue the fruit industry from these conditions the good ship Coöperation must stem the currents, counter-currents, and the undertow of selfishness and self-interests; it must avoid the sunken rocks of prejudice and distrust which have made so many wrecks in the past; it must battle with the shifting winds and changing sands of insincerity, until she reaches the gulf stream of confidence and the trade winds of prosperity.

This will require wisdom, prudence of insight, and self-sacrifice on the part of all who partake in this movement, for coöperation under present conditions means more than the herding together of the masses by self-appointed guardians. It signifies more than a "stand and deliver" scheme to secure fair prices. It means a thorough organization of those personally interested in the industry, beginning with the grower of the product and ending with the consumer—an organization of the growers for the growers, with the speculator and speculating interests eliminated. Based upon neighborhood organization looking forward to a central exchange composed of representative growers from each of the local associations, this is feasible, practicable, and is not subject to the abuses which have wrecked the hopes in the past. And until our coöperative efforts shall be based upon practical and sensible methods, which recognize the rights of the grower to direct his own business affairs as other men, we will continue to stumble over the stumbling-blocks in the coöperative highway until they are removed, for which I earnestly labor and devoutly pray.

PRESIDENT COOPER. I will say that the report of the committee of fifteen, on this question of coöperation, will take precedence to-morrow morning over everything else, at 9:30 o'clock. The chairman will be limited to fifteen minutes, and all others who wish to discuss it will be limited to five minutes, and no longer time, without the consent of the Convention.

CONSIDERATION OF REPORTS OF COMMITTEE ON TRANSPORTATION.

Here the report of the Committee on Transportation was read by Secretary Isaac, and also the supplemental report, and the minority report.

Motion made and seconded that the minority report, made by Alden Anderson, be made the report of the Convention.

PRESIDENT COOPER. You will understand when you vote that this is on the minority report and not on the majority report.

QUESTION. Do we understand that this minority report is to take the place of the majority report?

PRESIDENT COOPER. Certainly.

A MEMBER. I would like to hear the difference between these two reports.

MR. ANDERSON. The reports speak for themselves, but I regret that the audience could not, apparently, hear them read perfectly. I would say that there is very little difference in them except in degree. The majority report has minimized one essential which I think very important. These car lines are all under the control of the Interstate Commerce Commission, and are made common carriers. It is simply a question of degree between the two reports. You heard here this morning a report from a transportation man in regard to the car-line matter. I want to disavow any connection with any car-line company or any transportation company. I don't know anything about their business. But I am interested in orchard products and in California, and I never will do anything consciently that will cast reflection upon any single industry in the State.

MR. JACOBS. I will also state that I have no interest in this matter excepting the general welfare of this State, and the difference in these reports refers probably to the question of refrigeration. I have no objection to the majority report, except that it states things that are not true, and that is that refrigeration has been the bane of California. It has been said here that the cost of refrigeration is less in proportion than from other Eastern points. Refrigeration is a special industry; it is a special branch of business. All the railroads throughout the country carry refrigerator cars for the various companies, and my own idea of the matter is, as I suggested a number of years ago when this matter first came up, that if we had an organization in California sufficiently large to invest twenty or thirty million dollars in refrigerator cars, you ought to go to work and buy your own refrigerator line.

DR. DINSMORE. I have had some experience in this matter of shipping fresh fruit. I like the clause in that minority report. I wish it were still stronger. I was reading the other day about the failure of

Porter Brothers Company, in which their affairs were disclosed under oath. I have not yet seen the official report, so what I am saying now is from the newspaper report. It was proved that there was a profit of $80 from Sacramento, and of $73 from Riverside. And refrigeration was no option with us at all. It was brought out in the testimony of the president of that company that icing those cars cost just $10.32 and that there was a rebate given of more than $70, which was divided among certain people. Mr. Watson said he got $50,000 in one year. If we could only bring cases like that before the Interstate Commerce Commission, and have a court with power to prosecute for the criminal violation of the laws, it would be effective, and I entirely indorse the minority report and feel that it is not quite drastic enough.

MR. HARTRANFT. This is the first year this question has come fairly before the fruit-growers. On every other occasion it has been the case, in order to vote down the various reports, it has gone on record as being against any advancement along the lines of improvement in our transportation facilities. This year we have got it fairly and squarely set before us, with the distinction between a sensible report and another kind of a report. Now there is a much larger difference between those two reports than most of you think, and I am going to use my five minutes to point out where the difference is. If you will shake Mr. Stephens's sleeve you will find it. Every year he has brought into the Convention an innocent-looking report, and he has hidden in his inside pocket the real facts, and he has held back the true facts. He has given us an unreliable compilation, or partial facts and figures which do not represent the condition of our industries. At the two previous annual conventions he has showed us his report and held back the printed tabulated statement. It does not give us honest figures. And after we have admitted the report, he has circulated in the hall the other one decrying our industries and prosperity, and befouling our own interest. The difference between these two reports is that the one is for a better transportation service, the elimination of the criminal rebate, and defending the name of our fair State, and the other is not. That is the vital difference.

MR. WEINSTOCK. Ladies and gentlemen, I also am opposed to the majority report, partly for the reasons that have already been stated, and partly for other reasons which I shall state. In the first place, the majority report is in error, in my opinion, when it says that the refrigerator business is a monopoly. I do not so understand it. Only yesterday, coming down on the train with Mr. Sprague—his word is always found to be reliable—he informed me that the refrigerator business was not a monopoly of Mr. Armour; the Santa Fé Company had its own refrigerator lines, and that he was at perfect liberty to ship on the Santa Fé, and did ship over that line; that no man is obliged, or coerced, or compelled, to ship in Armour's cars. It lies entirely with himself to decide whether he will ship over the private car line, over the Southern Pacific, belonging to Armour, or whether he will ship on the refrigerator lines owned by the Santa Fé Company over the Santa Fé lines, and to that extent this report is in error. I am rather inclined in favor of the minority report, because we heard this morning a statement presented by a railroad authority, who pointed out that to compel that particular company to establish a refrigerator car line of its own would involve an outlay of between eight and nine million dollars; that to make that investment on top of existing investments would make the carriage of freights in refrigerator cars unprofitable to the Southern Pacific Company. I, for one, do not want to ask any individual or any company to do that which is unreasonable and unfair and unjust, and if we ask any company or any individual to do business with us at a loss, we ask that which is unreasonable and unfair and unjust. And until the gentlemen representing the majority report can show that these statements made by the speaker this morning are not true, and that the Southern Pacific Company can afford to own its own cars and handle a refrigerator line at a profit, I shall feel that we have no right to ask this transportation company to do that which we ourselves would not do if we were in the place of the transportation company.

Furthermore, it has been suggested here by Mr. Stephens, when the question was first brought up, that if refrigeration was objectionable, and if it was an injury to the industry, we should reject the refrigerator cars and use freight cars. You remember he said that you could not get them. In that he is in error, because only a few years ago, while president of the California Fruit Growers' and Shippers' Association, I received a communication from Mr. Stubbs, who was then in charge of the freight department of the Southern Pacific Company, in which he said that the railroad company was opposed to the use of refrigerator cars; that they had gone to the expense of having several hundred ventilated cars made for the express purpose of carrying fruit, and he urged upon our association to do all that it could to induce the growers to accept the ventilated cars, and assured us that, so far as the company was concerned, he would give them the best possible time. We did the very best we could to persuade the growers to use the ventilated cars, and we absolutely and utterly failed. The growers insisted that they wanted the refrigerator cars, making no objection to the additional cost, claiming that the fruit arrived in very much better condition, so that it commanded the highest price. Hence, Mr. Stephens is in error if he says that the railroad company insists upon the use of refrigerator cars. You can have other cars on demand, providing you act in good faith and assure the company that you are ready and anxious and willing to have them. For all these reasons, gentlemen, I am opposed to the majority report and shall vote in favor of the minority report.

MR. PELTRET. This proposition clearly puts the matter before this Convention, as I see it, that if Mr. Anderson's report had been presented to this Convention as a majority report there would be no question in the mind of any one about accepting it. All of the provisions in Mr. Anderson's minority report are in the majority report with some other matters. When the majority report was submitted, Mr. Anderson presented this minority report, and that minority report, while stating certain just grievances which required remedy in a transportation way, purposely, apparently, left out the private car-line proposition. Now the result of that was that if the minority report had been adopted by this Convention as the substitute for the majority report, whether intentionally or not, we would have been put on record as being decidedly in favor of the private car lines. That is to say, we would have been in the position of practically saying that one of the worst and most atrocious wrongs which the producing interests of this country ever suffered was not a bad thing. Even in the minority report as it stands now, the proposition in relation to private car lines is left in such a form, and intentionally left in such a form, apparently, as to make it appear that the Convention does not regard private car lines as a bad thing, but that it would like the gracious railroad company, when it is ready to do so, or when it has money, at some time in the far-distant future, to provide refrigerator cars of its own. That is to say, this proposition is not merely to vote on that report; it would otherwise be a good report if this discussion had not come up. You have heard speeches in favor of one and the other, and also honeyed words in support of, and apologies in defense of, the railroad companies which have been such benefactors of the public and of the State of California, especially the Southern Pacific. I would like to talk on this subject for about an hour and a half if I had an opportunity.

Mr. Chairman, over a hundred years ago, because of a nominal tax on tea, certain Americans went upon a ship and threw that tea overboard, and that was the birth of the American Republic, and all because you were taxed without representation. To-day we are suffering with a far greater taxation without representation, of a far more enormous and worse kind, and yet there is hardly one who will get up in opposition to it. We have our Legislatures corrupted, Congress bought, executives controlled, and courts themselves under the control of these great corporations.

MR. GORDON. I do not intend to make many remarks. I did not sign my name to the majority report of the Committee on Transportation. I did not see any reference to any refrigerating matter. I believe the private car lines are absolutely detrimental to the best interests of the fruit-growers of the State of California. My evidence is this, which I think is not disputed. Porter Bros. of Chicago, for a number of years, paid rebates to different people. If one firm can pay such rebates and make money, why can not others? I am not a railroad man, but I have sufficient confidence in the financial policy of the Southern Pacific Company. And I submit to this Convention that the statements that came from the official of the railroad company are made for the purpose of leaving us a little to one side. If the Armour Company can build 7,500 cars and rent them to the Southern Pacific and net $75 a car and rebate and make money out of them, why can't the Southern Pacific? That is all I have to say at present.

MR. SPROULE. This is not the first Fruit-Growers' Convention in which I have, by your permission, been a participant; but in all of them those same rash statements, requests, and exaggerations in the resolutions of the Committee on Transportation have prevailed. And I regret to notice that the facts in that report are not as the Convention knows them. To state, for example, that refrigeration is the bane of this State, is, within the knowledge of every fruit-shipper in this room, a fiction. If you will permit me now to give you a history of refrigeration in this State, it is this: At first the Southern Pacific built ventilator cars to carry fruit; finally, some shippers of more advanced ideas, in their own view, devised the scheme of shipping in refrigerator cars, and said that if refrigeration were granted them there would be no difficulty about the time that the fruit would be in transit. The Southern Pacific did not take that view and counseled against it. The facts are, that after the refrigerator car came in, the clamor for faster time was just as insistent as before. The company did not engage the first refrigerator cars; they were engaged by individuals, and the refrigerator charges were three times then what they are now. Finally, connecting roads were compelled to put on cars, the Rock Island Dispatch was put on, the Northwestern went into the business, and as time progressed, it was found that by other concerns going into the business of refrigeration, an additional drawback was discovered. It was found that certain cars furnished by some companies were more desirable than those furnished by other companies, and it was advisable to get a uniform type of refrigerator car, and that was in deference to a public demand. We hauled refrigerator cars to this coast by the hundred, only to leave them on the sidetrack, because the shippers said they were not suitable for fruit. Finally, we developed the plan of engaging a line of refrigerator cars of uniform type and having a provision for their systematic care while in transit so that the fruit would get proper attention. Then, as now, arose the question as to why we could not continue to ship in ventilator cars instead of in refrigerator cars. We were assured at one of these conventions, that if we put in additional ventilator cars to those we had already had, a large volume of this business would go in ventilator cars and the refrigerator cars would not be necessary and the demand for refrigerator cars would correspondingly decline. What was the result? We put approximately $750,000 into the highest type of ventilated fruit cars, and those cars remained on the sidings. Shippers would not use them, and we had to change them into box cars or find any use for them that we could. Now that is the condition with which we are confronted in the matter of the ventilator cars. The question was asked, "Why don't you ship in box cars?" The demand for that class of cars is gone, and that it will not come back we have tested. This theory, that there is some collusion under which transcontinental carriers are a party to the robbery of the fruit-grower, I can not conceive. I know the fact is not so. Our contract with the refrigerator car company is on file with the Interstate Commerce Commission. It is a regular business transaction and without any covert clause; it has been before the Interstate Commerce Commission in two cases, and they know all about it, and anything to the contrary, is contrary to the fact.

In the matter of this rebate, it seems to me that what the Convention is really seeking to accomplish is to put itself on record as in favor of the lowest refrigerator charges practicable, and the elimination of rebates of any kind. Now allow me to inquire of this Convention as a business convention if that is not so? Let us get at really what you want in the fewest possible words. If you will bear with me in saying this—I do not wish to be in the position, even by implication, of censuring this Convention. I greatly respect its deliberations and welcome the privilege of addressing you, and anything that I may say is merely in a desire to throw some light on the situation as it exists. I do not know that there is anything further for me to say at this time, but if the Chairman desires any questions to be asked me pertaining to the subject I will be glad to answer them.

MR. STEPHENS. The statement made by Mr. Weinstock is correct regarding whether the company would furnish ventilator cars if desired?

MR. SPROULE. His statement is correct in this sense: The Santa Fé on its rails furnishes Santa Fé refrigerator cars; the Southern Pacific on its rails furnishes Armour's refrigerators. There is no such thing as shipping Santa Fé refrigerator cars over the Southern Pacific lines. The Santa Fé does not accept Armour's refrigerators for shipments over its rails, and the Southern Pacific does not accept Santa Fé shipments over its rails. They are not interchangeable. The Santa Fé provides its own refrigerator cars for its own business, and the Southern Pacific provides refrigerator cars of its own, and the car moves over the line that provides it.

MR. STEPHENS. My question was not relating to refrigerator cars, or the furnishing of cars. Mr. Weinstock said that if a shipper desired to utilize ventilator cars, the Southern Pacific would furnish such cars.

MR. SPROULE. I don't think Mr. Weinstock said so. However, I will answer it. Indeed, I have already answered it. The Southern Pacific Company to-day has not ventilator cars for the purpose, because, as I have already explained, when we had many hundreds of those cars and all the equipment at the suggestions of the shippers, and the shippers wanted them, they would not use them and we had to turn them into our general business. The last order on these cars was for seven hundred, and we had to turn them into our general business, because the shippers would not use them.

MR. STEPHENS. At one time the Southern Pacific, at the request of the growers, expressly built over seven hundred ventilator cars?

MR. SPROULE. In addition to the thousands it already had.

MR. STEPHENS. Should it develop that the fruit-growers to-day wanted ventilator cars and would indemnify the company with a bond, so that they would suffer no loss, and should want those ventilator cars, could they get them?

MR. SPROULE. I believe so.

MR. STEPHENS. Is it not a fact that shipping is obligatory in refrigerator cars to-day? Supposing a shipper should make application to ship fruit in a box car, could he get it?

MR. SPROULE. He would be idiotic if he did make that application.

MR. STEPHENS. Supposing some of them did, for the purpose of shipping oranges, as some of them do to-day?

MR. SPROULE. For deciduous fruits we give them refrigerator cars; they cost them nothing.

MR. STEPHENS. I am simply asking the question. Is it not so?

MR. SPROULE. Not necessarily so. Let me answer you in another way.

MR. STEPHENS. Mr. Naftzger asked permission of your company some years ago to ship fruit in ordinary cars to El Paso, because there he wished to transfer it to a refrigerator car so as to get a rebate from El Paso on east, and your company refused to give him that privilege. Do you remember that?

MR. SPROULE. I would not be surprised. That was part of the general effort to obtain rebates, which our company, having no desire to share in, did what it could to prevent. We have always stood against rebates.

MR. STEPHENS. If I understand the conditions rightly to-day, the Southern Pacific rents a refrigerator car line, and the Santa Fé owns its own line. What difference is there in the matter of rates between the two companies in refrigeration?

MR. SPROULE. None, so far as I know. If our charges were higher than the Santa Fé's they would get the business. Regarding refrigerator companies, let me say this: I believe there was such a time; it was a time when the citrus fruit business was in a state of demoralization. The law provided that carriers shall not be party to the giving of rebates. The shippers of southern California, witnesses on the stand before the Interstate Commerce Commission, said that they did not believe there was any fruit shipped out of southern California on which there was not a rebate. In the investigation of the citrus fruit business they did not find that the Southern Pacific had paid any rebates or been a party to their payment. That is the history of that. We endeavor to obey the law. We were then, we are now, and always have been against the payment of rebates.

MR. STEPHENS. If the fruit-growers of this State were to buy their own refrigerator cars from some company, would the Southern Pacific make a contract to handle those cars?

MR. SPROULE. We would make contracts with any refrigerator company under existing conditions if they could furnish the cars in sufficient number and of the proper type; they would have to be such that all railroads would accept them. Those are the requirements.

MR. STEPHENS. Supposing the citrus fruit-growers organized a company and bought nine hundred cars, or enough to handle their business?

MR. SPROULE. It is not a question of refrigerator cars altogether. It is a question also of the organization to take care of them. The fruit is loaded in the car, and the ice is put in the car after it is loaded. That is only the very beginning of the transportation. Now it is required that that car, which is started for a certain market, Chicago, for instance, shall be iced at all points in transit; it shall be iced at certain points, and it shall be ventilated at certain points. May be it was billed for Chicago, and it may go to Duluth, or to Boston, or to Jacksonville, Fla., or Memphis, Tenn., or Galveston, Tex.; it may be diverted to any town in the United States, and is diverted in a large number of instances to any town that the shipper designates. It requires organization to do this; it can not be done otherwise. If it were not so, disaster would result of the worst kind. Consequently the carrier has to provide the ice at the proper places; the carrier has got to provide for its wanderings all over the United States, and divert the car, depending upon the exigencies of the market and the stress of condition which the shipper and the consignee are confronted with. All of this organization costs money, and business can not be done except for reasonable compensation.

MR. STEPHENS. Do I understand that it would be impossible for the Southern Pacific to own its own refrigerator cars?

MR. SPROULE. Yes, sir.

MR. STEPHENS. Is it not a fact that the company can not send its cars over the Santa Fé?

MR. SPROULE. The Southern Pacific Company has no jurisdiction beyond its own rails. No other road has jurisdiction beyond its own rails. That is true of every road in the United States.

MR. STEPHENS. Do I understand that it would be impossible for the fruit-growers, if they bought five hundred refrigerator cars, to get ice, etc.?

MR. SPROULE. I certainly think so.

MR. STEPHENS. In regard to the diversion you spoke of, that would be within the control of the refrigerator company, I presume?

MR. SPROULE. The diversion is under the control of the railroads, but the railroad diverts at the will of the shipper. The shipper, not the railroad, determines the route of the freight. We have no jurisdiction over that. We accept the routing given by the shipper over our rails and connections. In diverting these cars we must have an understanding with the refrigerator car concern. It must be iced at certain places, and ventilated, and is likely to be diverted. We divert the car at the request of the shipper, and see that the Armour Company provides the necessary ice and care during transit; that is part of their contract. Our contract with them provides that we are to use their cars up to a limit of five thousand individual cars. Beyond that we may provide refrigerator cars for all purposes.

MR. STEPHENS. Then, so far as operating five thousand cars on your line, they would have a monopoly of this business?

MR. SPROULE. Yes, over our rails, and so will any refrigerator company that operates in the green fruit business over the rails of carriers.

MR. STEPHENS. Supposing the fruit-growers were prepared to purchase five hundred refrigerator cars and the Armour Company had not the full five thousand cars in operation over your line, we are absolutely barred from going on your road?

MR. SPROULE. What good would those five hundred cars do you without an organization to care for them?

MR. STEPHENS. If those growers gave you a satisfactory bond that they would not hold you liable for any damage?

MR. SPROULE. The bond would not be worth the paper it was written on, because if we accepted the cars our liability begins as a common carrier. We would be liable if we neglected our duty. If it were a more economical thing for the Southern Pacific to own and operate its own refrigerator cars to-day, and the money were available to do it, I do not see why it should not do it. But the fact remains that we do have the private car lines, and it would take an investment of between seven and eight million dollars for that equipment, the greater part of which would be lying idle nearly half of the time. I know that fair-minded men like you are can not expect the Southern Pacific Company to establish this, because it would be too expensive a project. The Armour cars are used all over the United States, and their cars are in service the whole year round. When they are not in use in California, they are in Florida, or in the banana trade from the Gulf, or in New England; all over this country and Canada; and they can keep their cars employed when we can not. That is the reason why we can more economically make a contract with the Armour car lines than we can furnish the cars ourselves.

MR. STEPHENS. Does the Great Northern and the Canadian Pacific own their own car lines?

MR. SPROULE. They do to some extent, but their business is but a few hundred cars; their fruit is almost all managed west of St. Paul.

MR. STEPHENS. If it should appear that a thorough coöperative organization of the fruit-growers of California were to provide their own refrigerator cars necessary for their service for the purpose of transporting citrus fruits and deciduous fruits, would the railroad as readily make a contract with them as with the private car lines?

MR. SPROULE. When the fruit-growers of California come to the Southern Pacific with a proposition to supply their own refrigerator requirements for the future, so that we can abandon our contracts now existing with these refrigerator companies, they will be received in precisely the same way as any other refrigerator company seeking to contract with us, on a business-like basis, for the use of the equipment and of the organization that goes with it for the protection of the fruit wherever found in the United States.

MR. STEPHENS. I suppose it would be sufficient for a time to show that the fruit-growers of California could successfully do business coöperatively?

MR. SPROULE. The answer to that would be, when the fruit-growers of California get into the refrigerator car-line business upon that scale, a fraction of their business will be fruit-growing, and the important part of their business will be the refrigerator car-line business. There is nothing in it.

PRESIDENT COOPER. The chairman of the majority reporting on transportation is entitled to fifteen minutes. Fifteen minutes now would be too late, and we had better postpone the vote on the subject until the chairman of the majority has a chance to say what he desires to say; so I think it would be better to take an adjournment to the hall in the St. James Hotel at 7:30 P. M.

(Calls of let us have it now; we won't be there to-night.)

MR. JUDD. Can I be heard on a question of privilege? Gentlemen and ladies of this Convention: My name appears on that majority report. I put it there for the very best reason—that it does not indorse any private car line, while the minority report does do that thing. Mr. Sproule made a remark here—he says that all over the United States the Armour cars are used. Well, that is so. But the Great Northern, Canadian Pacific, and Northern Pacific do not have car lines up there, and I want to say, gentlemen, right now, that the refrigerating charges are only on the initial icing, from $10 to $15, with an eight-day schedule to New York. The rate on all refrigerated fruit is only $1.18 a hundred pounds; the rate on all common fruits shipped in refrigerator cars without icing, like apples, etc., is 60 cents a hundred pounds, and delivered in eight days.

MR. STEPHENS. It is stated that the Santa Fé charges the same rate that the Armour Company does. It was stated upon the stand, I believe, before the Interstate Commerce Commission, that the Santa Fé paid a rebate of $25 a car, in order to compete with the Armour Company. Now if the Santa Fé had to pay $25 in order to compete with the Armour Company, what is the natural deduction to make from that? It is that the Armour Company was also giving rebates; and these rebates had to be given to the shippers in order to get the business. It has been stated by Mr. Sproule and by Colonel Weinstock that at one time the growers of this State could have had the use of the cars. Now, why didn't they get them?

MR. SPROULE. I said they had the use, and had them for a year. Don't misquote me, if you are going to quote me.

MR. STEPHENS. I believe you stated you built seven hundred additional cars?

MR. SPROULE. I told you, sir, from the platform, we had several thousand cars, and by a statement of representatives of the fruit-growers we put $700,000 more in, and they lay upon the sidetrack and you used refrigerator cars then.

MR STEPHENS. Then the cars were not used. It is also stated that the cost of refrigeration was twice as much as it is now, or, comparatively speaking, so. The men who handled your fruit, growers, were shippers. Porter Brothers Company and Earl Fruit Company each controlled a refrigerator car line, and if the profits on refrigeration now are sufficient to afford a large rebate, as the Santa Fé says it gave, and that Armour must give, what was done to the shipper? We consult the evidence given by Mr. Watson. He admitted the receipt of $50,000 a year just about that time, and before and after. So that shows what can be done by refrigerator car lines. I declare here that the refrigerator car line company can and does control the distribution and marketing of the fruit products of this State.

MR. SPROULE. That is not true. I know of my own knowledge.

MR. STEPHENS. I will ask you, Mr. Sproule, if you believe the condition existing, that will make it possible for Mr. Armour, if he sees fit, to make a profit of $1,200 a car, when the grower receives hardly a pittance, is a good thing for the fruit-growers of the State of California? Last winter the members of the California Fruit Distributors bought, on the Sacramento River, pears at 50 cents a box. Some of those pears sold for $4 a box. In round numbers that makes $1,920 a car. The freight was $360. We will add 15 cents a package that it costs to put these pears up, with $10 and some odd cents for refrigeration, and that makes over $1,100 a car at any rate.

COL. WEINSTOCK. Mr. Chairman, I move that Mr. Stephens have double time added for all interruptions. I have as my authority Mr. Sprague, in whom I think we all have confidence, who told me yesterday that most of the pear-growers on the Sacramento River have usually sold their pears at 50 cents a box; they received this past year 70 cents a box. Is that correct?

MR. SPRAGUE. Yes, sir.

COL. WEINSTOCK. At that rate, the growers along the Sacramento River received more money for their fruit this past year than they have in years previous. They were at liberty themselves, as I understand it, to take the speculative risk, and ship East, if they chose to do so; but they preferred to take an absolute price of 70 cents, forty per cent more than they had received in years past, rather than take any chances of shipping East. It may be that there were some cars that netted the speculators $1,200; but, as I am informed from reliable authority, there were tens of thousands of dollars lost by the speculators who shipped their pears East this year. Is that correct, Mr. Sprague?

MR. SPRAGUE. I understand that that is the case.

COL. WEINSTOCK. Yes, sir; that is. There were thousands of dollars lost. And when Mr. Stephens tries, by implication, to leave an impression that somebody made at the rate of $1,200 a car, he is endeavoring to leave a false impression that ought to be corrected.

MR. SPROULE. May I rise to a point of information that is important to the question before you? Under our arrangement with the Armour car line, no fruit is transported in these cars that is owned by the Armour Company. We did have a contract with a company to furnish refrigerator cars, some years ago, which was greatly objected to by the fruit-growers, because Mr. Earle was in the fruit business. We canceled that contract at the request of the fruit-growers, and entered into a contract with the Armour line on the condition, and notified them, that if we found they were interested in the fruit business over our rails, that any fruit in those cars was in their name or title, we would not renew the contract.

MR. STEPHENS. I will ask Mr. Sproule when the contract to that effect was signed?

MR. SPROULE. When the present contract was entered into. Some two or three years ago.

MR. STEPHENS. In regard to Alden Anderson, I wish to say this: He stated in his report here that the organization did not handle fruit for itself, as an organization; that it did not buy fruit, and in no way was connected directly or indirectly with the marketing of fruit or proprietorship of fruit. But he did not tell you that the members of that organization did not buy fruit. Mr. Anderson told you the reason the Distributors are of so vital importance in the necessities of the growers is that it can distribute at will and prevent gluts. Now, gentlemen, think a moment. If it can prevent gluts, it can create gluts at will. It can select a market for the f. o. b. fruit. I will state that any such a machine in the hands of any intelligent man can put the growers in a position that they will be compelled to sell their fruit f. o. b. In one week ending August 5th, of this year, the average loss on the sales of every car that was sold at the Eastern markets, reported here, was an average of $429 for every car—something over two hundred.

MR. DORE. How many of those cars were owned by the company—the refrigerating company?

MR. STEPHENS. I don't know. You will have to ask Mr. Armour.

MR. DORE. You stated they were in the business. Then of course they lost.

MR. STEPHENS. I don't know whether they did or not. We only get the reports of auction markets. Now, sir, as a business proposition, Mr. Dore, if you had ten cars of fruit, you might have to sacrifice three cars, put them into glutted markets, in order to protect your private markets where the other seven went, and if you could control distribution, you are absolutely master of the quantity of fruit put into those protected private markets, and while you might lose $100 or $300 a car on the three cars, you could make $400 on them, and it was a business proposition, the necessities required that you distribute your fruit in this way in order to make a profit——

MR. DORE. I understood you to say that for a certain time all the shipments were at a loss?

MR. STEPHENS. No, sir. I say the reported sales, the sales in the auction markets, and I think it was three hundred and odd cars, sold at an average loss, last year, of $429 a car, and the aggregate loss for fourteen weeks this year I presume was over $830,000.

MR. SPROULE. What are the causes of those losses?

MR. STEPHENS. In my judgment, the Armour car line.

MR. ANDERSON. This morning I presented a report of the California Fruit Distributors, and I challenge denial of anything I asserted in there; and Mr. Stephens stood up there and moved that the report be accepted and placed on file, and now he is attacking that report. I rise to a point of order. It is not pertinent to this business, the transportation question. If he goes on, I demand a chance to reply to it.

MR. SHOUP. Just one moment. I rise to a question of personal privilege. There are statements made by me in my article that have been challenged both on this floor and outside, and there are one or two gentlemen who have laughed at the statements I made. I simply want to say that I am prepared to prove any statement that was in my article upon this subject.

MR. STEPHENS. Mr. Shoup, I want to ask you one question. Can I have the privilege?

MR. SHOUP. Go ahead.

MR. STEPHENS. I would like to ask why it costs the Southern Pacific more to haul a carload of prunes in bags than in boxes?

MR. SHOUP. I did not say it costs the Southern Pacific more.

MR. STEPHENS. Well, there is a difference in the rate.

MR. SHOUP. I did not say there was not.

MR. STEPHENS. Then you admit there is an increase in the rate?

MR. SHOUP. Yes, sir; and made at the request of fruit-shippers and fruit-growers of the State of California, in 1893.

(Question called for.)

THE CHAIRMAN. Now, the Convention will understand the question is upon the adoption of the minority report. All those in favor of the adoption of the minority report will hold up one hand.

(Secretary counts 53.)

THE CHAIRMAN. All those opposed to the adoption of the minority report will hold up one hand.

(Secretary counts 9.)

The Convention then adjourned until Thursday, December 8th, at 9:30 A. M.

PROCEEDINGS OF THIRD DAY.

THURSDAY, December 8, 1904.

The Convention was called to order at 9:30 A. M. President Cooper in the chair.

PRESIDENT COOPER. The chairman of the Committee on Resolutions has some resolutions he wishes to read.

REPORT OF COMMITTEE ON RESOLUTIONS.

Hon. John Markley, chairman of the Committee on Resolutions, reported the following resolution (introduced by A. N. Judd), with the recommendation that it pass as amended:

WHEREAS, The Government of the United States, through treaty and by purchase has acquired the Panama Railroad, or at least sixty-nine seventieths of the same; and,

WHEREAS, There exists at the present time between said railroad and the Pacific Mail Company a certain traffic contract; therefore, be it

Resolved, by the Fruit-Growers of California in Convention assembled, That said contract is extremely detrimental to the best interests of the Pacific Coast in general, and, to the fruit-growers in particular; and be it further

Resolved, That the fruit-growers of California herein petition the President of the United States, that he will, at his earliest convenience, abrogate said traffic contract. By so doing, he will not only greatly increase the traffic for said railroad, but very materially reduce the present burdensome transcontinental rates.

On motion, the resolution was adopted by the Convention.

The following resolution, introduced by Edward Berwick, was reported by the Committee on Resolutions, with the recommendation that it do pass:

WHEREAS, Our postal service is at present lamentably deficient in the matter of an up-to-date foreign and domestic parcels post; and

WHEREAS, The American express companies have found it possible to inaugurate for the British postoffice a postal stamp rate on British parcels of 24 cents for eleven pounds, to any postoffice in the United States, thus proving the practicability of profitably doing the business at such a rate.

Resolved, That this Convention of the Fruit-Growers of California, assembled in San José this 9th day of December, 1904, hereby requests its Senators and Representatives in Congress at Washington, D. C., to introduce and support such measures as shall secure for the American citizen, through the United States postoffice, a parcels post at least as cheap and effective as that now afforded by the American express companies to the Briton.

Resolved, That this Convention also requests the President, in conjunction with the Postmaster-General, to conclude postal conventions for the handling of parcels up to eleven pounds weight, with all the nations who are present members of the International Parcels Post Union; this on as favorable terms as those enjoyed by the citizens of Mexico and European lands.

MR. BERWICK. You have heard the resolution read. You have heard that the American express companies are carrying for the British public eleven pounds for 24 cents between New York and California. I have in my hand a letter received this morning from Professor Wickson, whom you all know and respect highly, in which he says that they have agreed to carry for the French public eleven and a fraction pounds for 24 cents between New York and California. I thought I would tell you this as additional proof of the proposition. If it can be done and is being done for the British and French people, it has got to be done for the Americans. (Applause.)

The resolution was carried as read.

The Committee on Resolutions then reported favorably on the following, and it was adopted by the Convention:

Resolved, That we request the Governor and Legislature to provide for a non-partisan revenue or tax commission, whose duty it shall be to formulate a revised code of revenue laws which will provide a different system of revenue for the State from that for the county or municipality. That this may be accomplished, we ask the Legislature to submit a constitutional amendment to the electorate, enabling the commission to formulate, and the Legislature to enact, a revised and equitable system of revenue laws herein contemplated.

DISCUSSION ON TRANSPORTATION, ETC.—(Resumed).

MR. SPRAGUE. Mr. Chairman, just a word or two preliminarily. In the heated affray that took place yesterday afternoon I was not able to say all I wanted to. I want to say emphatically that in my judgment there is no truth whatever in the charge that the California Fruit Distributors were managed dishonestly. I was in the office nearly every day during a busy season, and so far as I know there was absolute impartiality shown in the distribution of cars. I want to say that there are undoubtedly limitations in that organization. But it is not true that cars were distributed to the disadvantage of any one man more than another. Secondly, I want to say that it is not true that that organization showed any special favor to the Armour interests, that is, this year at least. Evidence of that is the fact that we, a coöperative organization, made up of growers, absolute coöperation, gave a large portion of our business, almost half, to the Santa Fé refrigerator line, although we were members of the California Fruit Distributors. Because we brought the Santa Fé Railroad here into competition, we enable the fruit-growers on the Sacramento River to get 60 cents instead of 50 cents for their pears this year. A coöperative action was what brought that condition about, gentlemen. If you wish relief, get together coöperatively; you will then get relief in the way of transportation, and that is the only way it can come.

MR. STEPHENS. It is hardly fair to cast reflections upon statements made by another member without his having an opportunity to place the matter right before the Convention. And I should have an opportunity to answer.

MR. SPRAGUE. I have cast no reflections at all. I will speak absolutely on the subject of coöperation, which I think is very closely allied to the subject of organization, of the dried fruit interests of California. Unless we can secure an efficient organization for the marketing of our dried fruits, there will continue to be a surplus of fresh fruits pushed into the Eastern markets; more than can be sold. We can sell, in an ordinary year, in the East, from five to seven thousand cars of fresh fruit. It does not matter what the conditions are back East, we can sell the minimum amount of fresh fruit. When we get a thousand or two cars over that, that is enough to make a surplus, making low prices. If we can keep back a thousand or two cars of peaches each year we can prevent this glut and keep the fresh fruit market prosperous. We can not keep those cars back unless we can make it profitable to dry the fruit. It would not be profitable to dry it unless we could get an organization which will control the marketing of it here, in a systematic, business-like way. The same thing is true of apricots, and, of course, you know the condition of prunes. Now this is preëminently a fruit-growing State. It is the fundamental industry.

Now there are two questions presented to this Convention about this report of this committee of fifteen. One is a method of strictly coöperative organization. If that is not available, then the only alternative is the profit-sharing plan, which I think is more available, and should be the one favored by you. Then the question is, which of these two plans is more likely to obtain the favor of the fruit-growers of the State? There is one way, of course, in which all of these things will right themselves, but that is through utter ruin and chaos; it is through the foreclosure of mortgages, and the breaking of hearts. Are you willing to let it go that way, my friends? If there is an ounce of manliness left in the fruit-growers of California, if there is an ounce of courage left, they ought to stand together and step forward and say *NO*. Why, the ignorant garment-workers, the Polish tailors of New York, the unskilled labor fresh from Europe, suffering there in the sweatshops for years, under the most terrible conditions that human life could find, had the courage and intelligence to get together and coöperate, and to coöperate so effectively that they have put all of those conditions in the past. They have improved their scale of living; their wages have become better. They have solved the problem, in spite of the fact that three or four thousand are coming to New York every year, and still they are able to maintain coöperation. Should it be said that the intelligent fruit-growers of California can not do as much as those people? Now, I said to a gentleman yesterday that ruin would come unless something is done to organize. He said, "Ruin is here. Half of our orchardists don't know how they are going to get through next year." All of the fruit men in this room know that there is no future for prunes, with an average crop, with conditions as they are now, unless we can secure an organization to push the marketing in intelligent, business-like ways. Now then, I ask you if there is anything more important than that? And if we are to be content with merely passing resolutions—if we go out of this Convention before we adjourn, without agreeing upon the most practicable plan, according to the judgment of all—we will make a mistake. Now I am not going to take more time except just simply to beseech you that in this discussion you keep clearly the difference of these two points, which of these two points do you think most available? The Rochdale plan has been put forward, and that has been used successfully by business organizations; it is the plan used by all fraternal organizations, but I don't think it is practicable. I think the discouragement and disgust that have come upon our fruit-growers generally are the results of the failure of the prune association and of the raisin association, and will prevent any genuine coöperative organization. I believe that the profit-sharing plan is practicable. I think it will appeal more powerfully to the fruit-growers of the State. I think that after the termination of the five years' contract it will then be possible, very likely, to have a coöperative organization. Now then, gentlemen, I leave the subject with you, hoping that you will keep closely to the discussion of those two things.

REPORT ON PRUNE DEMONSTRATION AT ST. LOUIS.

By PROF. C. W. CHILDS.

Mr. President, Ladies and Gentlemen: For some years I have advocated the plan of advertising prunes by demonstration, and this last spring Colonel Hersey and Mr. Lyon and some other members of the Grange and the Farmers' Club said to me: "You have talked over this subject a good many years; now put it into practice." They said: "If we can arrange to have you go to St. Louis and cook prunes and give them away, will you do so?" I said, "If you will simply pay the expenses of myself and wife, we will go there and see what we can do for you." So they raised $2,000. And let me say that we spent six months giving away two thousand dishes of prunes a day, and when we made our report we turned back $200, so it only cost $1,800 to do this work. Before returning I visited western New York, visiting such cities as Buffalo, Syracuse, went down through Pennsylvania visiting the miners, in Indiana, Ohio, and Illinois, and I believe I have talked to more people than any other man who ever went back East from this State. Over two thousand people passed through our booth every day; we gave prunes to two thousand, and probably a thousand more came through the doors. Now, when I went East I was under the impression that the people did not like prunes, and that that was the reason there was no demand for them. But to my surprise, ninety-five per cent of the people whom we questioned said they liked California prunes. I was surprised at that. We asked these two questions of the people: "How do you like California prunes?" and "What are you paying for them?" I was surprised when I found that nine tenths of the people said they were paying 12½ to 15 cents a pound for prunes. I went to western New York, Buffalo, Rochester, and spent some time in Detroit, and different towns like Cayuga, Senaca, Onondaga, Ithaca, and Syracuse, and I asked the same questions. I found that the merchants in many places kept their prunes in bins, all mixed together.

In St. Louis, in a store close by where we were stopping, they were selling two pounds of prunes for a quarter. We lost a great many prunes because of molding. In our booth we had prunes from every packer in this valley, fifteen or twenty boxes, and there was not a box, by the 10th of August, that we dared open. All the processed prunes had spoiled. Those in bags did not. We had to write back for more prunes, because the processed prunes had spoiled. Those put up in bags and unprocessed, kept much better. When I left there in October, the prunes that were unprocessed were in good condition. Some had sugared a little, but none had molded.

In Oakland the other day, I sent out to get some prunes, and we got some from two or three different stores. None of them were fit to eat and we had to throw them away. So I sent down here to the fruit exchange and got a sack of unprocessed prunes. In the East I asked a good many dealers why they did not deal in California prunes, and they said they could not afford to deal in them. They were not pushing California prunes and did not buy them to any extent at all in the present condition. The demoralized condition of the market keeps them from buying. I have come to the conclusion that all this talk and discussion about transportation, so far as dried fruit is concerned, is nonsense. If the railroad companies would carry your prunes for nothing, and you spent a hundred thousand dollars in advertising, as the California Cured Fruit Association did, you would not be any better off. If you can not get the prunes to the consumer at a less rate than he is now paying for them, there is no use in selling prunes at all. That is the question. The whole problem is how to get prunes to the purchaser, the consumer, at a less rate than you are to-day. Now all of these people who said they liked California prunes would be glad to use them if they could get them at a fair price. And when you have settled that question, you have got the whole question settled. That is my opinion, after a very careful examination of the situation, and after questioning thousands of people this last summer.

DISCUSSION ON CO-OPERATION.

MR. JACOBS. About a year ago I was invited by one of the leading combinations in the East to write a history of the California fruit industry from its inception. Having grown up in the fruit business, I made a very exhaustive examination of the subject before proceeding to write the history, and I was surprised at what I found. I discovered that right from the beginning of the fruit industry there had been many discouraging features. I discovered that dried fruit was overproduced over twenty-five years ago. The result was that the people were compelled to look for new markets. When the canned goods business began in 1878, a meeting was held in San Francisco; the banks withdrew all support to the canners; they said there was overproduction. So you can see that it is less a question of transportation than of distribution. For a number of years, up to two years ago, I have written papers presented to the State Fruit-Growers' Convention on this subject, the wider distribution of our products. I contended then, and I contend now, that that is the solution, the actual solution of the question. Transportation, while an important question, is not so important. In the green-fruit business it is a question of expeditious service. But unless you have a systematic method of handling your products you will not be able to succeed, and the results have proven this in both the prune and the raisin business. Coöperation in dried fruits and in canned fruits alone in shipping will succeed. I will state right here now, and I challenge any one to contradict the statement, that if it had not been for the fruit-canning industry of California during the year 1904, your growers would not have known what to do with their products. And yet the California canning industry only handles a very small proportion of the fruit crop of this State. We have got to face the situation as it is. I think the second plan is best, but we must exercise the necessary care and skill in selecting the management, so that the fruit will be honestly distributed and handled, so that there will be no dishonest dealing of any kind.

MR. GORDON. I am very much interested in this subject. I believe that this coöperative proposition is the right thing for us to pursue; and it has been the prominent factor that has entered into every fruit organization attempted in this State, to my knowledge, at least north of the Tehachapi. We have been shown the necessity of something being done, and the committee has outlined this plan of coöperation to save the fruit industry of this State. The plan is beautiful, but putting it into execution is the next thing. In reference to the organization and coöperation of farmers, I have had some considerable experience. I spent the greater part of one summer in trying and helping to organize the Raisin-Growers' Association. I claim, after spending anxious days and anxious evenings laboring and lecturing to the raisin-growers, to know something of their disposition; and I presume the disposition of the prune-growers is about the same as the disposition of the raisin-growers. Now, gentlemen, this one thing is true, and I defy contradiction. There is no plan, there is no man, there is no power outside of the intervention of the Almighty that can make all of the raisin-growers get together into an association. There is no power, no man, no leader that can get all of the prune-growers into one association. Now, then, Mr. Chairman and Mr. Sprague, unless you can provide a plan whereby you can bring them all in, your coöperation must end in failure. There is one third of the human family that can get along all right without being mean or ridiculous. Now, then, one third of the fruit-growers in this country are earnest, coöperative men and will do anything at all to save the industry; that one third, by persuasion and labor, and anxious days and anxious nights, can draw another one third in, but no power outside of the Almighty himself can draw the other one third in. That one third will prevent the organization of the fruit-growers of this country. The Raisin-Growers' Association has only three thousand growers in it. At first many of them stood together; but those outside of the association were making more money than those inside. At last some of the members in the association got dissatisfied, and in some cases they delivered one half of their raisins by moonlight to their neighbor who was outside of the association, and the other half they would deliver to the association.

MR. SPRAGUE. We all know perfectly well that the raisin association did not succeed. Let us quit discussing this and keep to the line.

MR. GORDON. I propose to give you a remedy. I believe that no human being on earth could get all the fruit-growers into an association. Now then, unless something can be done, we can come here year after year; we can pass a fiery resolution, and we can get up those theories that read beautifully, but they are not effectual.

MR. JACOBS. I want to ask a question of Mr. Gordon. Is it not a fact that when they started the coöperative plan in Fresno prices nearly doubled in value for the next few years and brought millions of dollars to the producers?

MR. GORDON. They did not double; they increased in price. They did make millions of dollars. But those outside were making more money than those of us inside. I say that there was an overproduction, and it is proved by the fact that 40,000,000 pounds were piled up in the month of August last year. That showed clearly and conclusively that the raisin business was overproduced.

PROF. FOWLER. I do not propose to discuss the question as to whether coöperation is a good thing or not. I do not believe that there is a man or woman in the fruit business or in the agricultural business in this State who is in this Convention here but recognizes the fact that some kind of coöperation is necessary. The question is, how? I believe that the plan of organization that will be available to the fruit-growers of this State is to have branch organizations in the different parts of the State, composed of those having interests in the fruit business and in their homes, and these organizations may be unified in one central organization. I believe that is the plan that you will finally adopt. It is the unit idea; it is the home rule, home government, and it is the unification of all these in one central organization to do all the business. You say, is this possible? We have this plan working at San Diego and other points in California, in Oregon and Washington, and they all have confidence in the central organization, located in San Francisco. Last year it sold over $50,000,000 worth of products. I could elaborate upon this plan if the time permitted. You can send and get printed matter concerning this method of coöperation if you wish and study it for yourself.

Upon calls for the question, the Chairman put the question on the resolution directing the Horticultural Commission to correspond with the growers to the end that a definite coöperative plan may be settled upon, and it was carried.

MR. DAY. I have been connected with the Southern California Fruit-Growers' Exchange. . In 1893 the orange-growers of southern California were in just the same condition that you people up here are in now. You have been told that you must line up all together before you can do a thing. What is the fact in southern California? The exchange down there has only one half of the orange-growers that are shipping through the exchange, and yet what is the result? We are successfully operating. How have we done it? We have cut out the middlemen. We are selling our products to the consumers direct. We have reduced the cost of selling from 10 cents a box commission to 3 cents. We have cut out the middlemen; we are packing and handling our products from the tree to the consumer. And that is just exactly what you want to do. How do we sell them? We pack and grade, and we have spent years in establishing our brands in the associations, and those brands to-day are the most valuable assets we have. Our brands have become well known in the markets of the East, and we have many customers there who buy them year after year. We have built up our reputation. The fact is that we run the association upon a business basis. Where is our capital? The only capital we have is the money that we have in our own packing-houses. We handle our fruit economically. We have cut out the middlemen; we have cut out all packers, packing and handling our own fruit, and we distribute it ourselves upon an economical basis. And it is possible for you to do the same thing. It is a waste of time to talk the theory. You can do it with only one half of the fruit-growers, as we did with one half of the orange-growers. One half of the orange-growers are outside, and they are helping the commission men to fight us, and yet we can market our fruit cheaper than they can and yet sell at a higher price.

MR. STEPHENS. I am a prune-grower quite extensively. A very large portion of my money is in prunes, and consequently I feel a very large interest in this question. In a dozen words let me say to Mr. Sprague and to Mr. Jacobs what I think I would have expressed yesterday had I been permitted to express myself as I had intended. I would not have said what Mr. Sprague said, as he said in a conversation with a gentleman yesterday, that our State is lost unless we had organization, or that ruin is here now. I would not have been so radical as that. I was not here yesterday when this proposition was read.

MR. SPRAGUE. The proposition is this: We can submit to the prune-growers of the State this proposition, providing that each prune-grower shall agree to sell his product for the next five years at a price slightly in advance of the market price at the time this contract is submitted to the people. Put those contracts away until we have accumulated a sufficient percentage to make it a probable success, and also awaiting the formation of a commercial company that will undertake to carry out the plans of the organization.

MR. STEPHENS. In the event a market is not found for the prunes, who will bear the loss of the prunes?

MR. SPRAGUE. The capitalists.

MR. STEPHENS. Then I understand that if they bring a profit, whatever that profit may be, that profit will be equally divided between the capitalists and prune-growers? Well, to that I have got serious objections, because I have put about twenty years in growing my orchard and renewing it each year. I have no doubt that if such an organization could be formed, in the end the entire prune interests would be turned over to the capitalists. They would get fifty per cent of the profit, and that would give them a half-interest in the business.

MR. SPRAGUE. Divide the profits on marketing. If there was a loss they, and not the farmer, would stand it.

MR. STEPHENS. Well, I am opposed to that. I am in favor of coöperation. I am a strong advocate of coöperation. I say I am a strong advocate of organization, and without organization you can accomplish nothing in any way, shape, or manner that will redound to your interests.

MR. McDONALD. Mr. Chairman, I have not consumed much time in this Convention, but I want to say that it gives me great pleasure to be present here and hear this discussion. I am a representative. It has done a great deal of good, at least I think it has, toward promoting the interests of horticulture. We have produced a good many and brought forward a good many persons who have been favorable to the horticultural interests; for instance, we have produced one who is now a member of our State and a valuable acquisition, and that is Mr. Burbank. I had a conversation with him only a few days ago; he is deeply interested in this State, and in horticulture, and is ready at any time to do anything he can in our behalf. Now I want the Horticultural Society of Sonoma County to be recognized here by the horticulturists of the State, and we are glad to be here and deliberate with you, and if we can do anything toward favoring those interests we want to do so. I simply say, without advocating either of the methods spoken about, that it does seem to me that the one Professor Fowler spoke about, along the lines he suggested, is the one we should follow. And then the one suggested by Professor Childs is a practical one, the plan of putting prunes on the market at a price at which the people can afford to buy. I do want our society on any of the committees that may be appointed, or in anything else we want to be recognized, so that we may work with you and for you.

MR. JACOBS. I want to ask Mr. Sprague a question, as chairman of the committee which introduced this report: Do you think that if the second proposal were adopted, a sufficient capital could be secured to put this plan into operation?

MR. SPRAGUE. There is only one question before you, and that is how to get sixty or seventy or eighty or ninety per cent of the prune-growers to make these contracts at the market price, to sell their prunes at the market price. That is the only thing before you. How can you get them to do it? The capital can be secured. I speak authoritatively. I know it is simply a question whether your prune-growers are willing to help themselves to that extent.

MR. JACOBS. If sixty or seventy per cent of the prune-growers would combine together on this second plan, is it not your experience that the price of prunes would bring half a cent a pound more than they do at present?

MR. SPRAGUE. There is no question about it in my mind, that if the prunes were under business control, so that the business could be pushed by the single idea, the single policy, they could be sold steadily on a 3-cent basis. But if you do not get ninety per cent you will not accomplish so much. You need ninety per cent in order to accomplish that. With a small percentage you can accomplish only a small good. You will accomplish considerable good with a small percentage, but your amount of good is entirely in proportion to the amount of the coöperation you get. Do not think that with any such organization as this on a profit-sharing basis, you could immediately advance the price of prunes. It is ridiculous to expect a commercial company to organize and help you out in that way.

MR. STEPHENS. I would like to ask, in your opinion, with such a consolidation, would the packer stand in with that arrangement?

MR. SPRAGUE. No, sir; absolutely not. The packer will not help initiate anything that tends to eliminate the packer. If this comes he might be opposed to it, and some might coöperate with it. But he will not help initiate it.

MR. STEPHENS. Then we would have a fight on our hands right from the start.

MR. SPRAGUE. We don't get along without fights in this world, if we do anything.

PRESIDENT COOPER. The resolution will be referred to the Committee on Resolutions before recess, as there are several things that ought to be passed upon.

On motion, the report of the committee of fifteen was received and placed on file.

MR. STEPHENS. Before we take a recess, I would like to talk about a matter that interests every member of this Convention. I think this is one question upon which we will all unite, and I believe the resolution is that we deprecate the absence of Senator Johnston from this meeting, and I would like to have the rules suspended and that the resolution be taken up and considered now for the reason that after the excursion many will be leaving the city and will not have an opportunity of expressing their regrets at his absence. Therefore, I move, with unanimous consent, to have that resolution taken up and considered. It will take but a moment.

Motion duly seconded and carried.

RESOLUTIONS OF GREETING TO SENATOR WILLIAM JOHNSTON.

WHEREAS, By reason of impaired health, our fellow-worker and esteemed neighbor, Senator William Johnston, of Sacramento County, has been unable to attend this thirtieth Convention of the fruit-growers of California; and

WHEREAS, We have missed his genial companionship and valued counsel in the deliberations of this session; therefore, be it

Resolved, That we extend to him our cordial greeting and best wishes for his early recovery, and that the Secretary of the Convention notify him of this action by his fellow fruit-growers.

MR. STEPHENS. I wish to say that Senator Johnston is not in condition to be present. I have never known a man more wretched than himself, and only his condition keeps him from attending here. It is, I am sure, the wish of every fruit-grower in this State to extend sympathy to him for the condition in which he finds himself, and we all hope that he will be able to attend the next convention. I move that the resolution be adopted by a rising vote.

Carried unanimously.

The following resolution, concerning the death of John Rock, was also read, and a motion was made for its adoption, which was duly seconded and carried:

RESOLUTION OF RESPECT TO THE MEMORY OF JOHN ROCK.

WHEREAS, In the wisdom of Almighty God, we have had removed from our midst a co-worker, valued and esteemed by all with whom he came in contact; and

WHEREAS, In the passing of John Rock, California has lost one of its most eminent horticulturists, a creative genius in the line of his chosen profession; therefore, be it

Resolved by the fruit-growers in their thirtieth session of the State Convention, That we deplore the loss of this man who so faithfully served his country in the time of war and served so well his chosen State in the noblest art of peace; and that the Secretary be instructed to spread these resolutions in the official report and convey the same to the family and business associates of the departed member.

The Convention then adjourned until 7:30 P. M.

EVENING SESSION—THIRD DAY.

THURSDAY, December 8, 1904.

The Convention was called to order at 7:30 o'clock. President Cooper in the chair.

PRESIDENT COOPER. The program is a pretty long one and we can not wait. I have rearranged the program for this evening so as to get through all the papers, if possible.

INSPECTION OF NURSERY STOCK FROM A NURSERYMAN'S STANDPOINT.

[BY GEORGE C. ROEDING, OF FRESNO.

All fruit-growers will concede that the growing of nursery stock is a legitimate business. No one will deny, who is at all familiar with the many difficulties with which a nurseryman must contend, that he is entitled to the same consideration any other business man would receive at the hands of the law. A nurseryman who has the interests of a community, as well as his own, at heart, can do more than any other person to build up and advance the fruit interests and encourage the planting of ornamental trees for beautifying city gardens, or making the surroundings of a country home pleasant and attractive. The progressive nurseryman is one who introduces new varieties of fruits and vines, and ornamental trees and plants, adapted to the soil and climatic conditions prevailing in his district, and who also, through his experience in such matters, is in the position to advise and make recommendations to newcomers, as to what to plant and what not to plant. Men who are such important factors in developing the very foundation upon which the horticultural interests of any section are built should receive every encouragement in the furtherance of their work.

It is demanded of nurserymen that they shall have their trees true to name, and that their stock shall be free from pests. Still, in many cases, after they have exercised all the precautions which any reasonable man could expect, it is a common thing to have stock condemned on general principles, even without inspection in some cases. When a nurseryman sells stock which may later prove untrue to name, the first inference of the fruit-grower is to set him down as a scoundrel, and if he happens to be dragged into court on account of his shortcomings, he receives such a drubbing down that by the time the court, lawyers, and jury have passed judgment on him, he is willing to question his right to even exist.

On the other hand, the unfortunate fruit-grower who has a mixed up orchard is in a very serious position, and after devoting money and three or four years of hard work to bring his trees into bearing, it is not in the least surprising that he should consider the injury which he has suffered, with a deep feeling of animosity toward the man who has brought him to this state of affairs.

To have nursery stock true to name is of the utmost importance to any nurseryman. This can only be accomplished by taking buds from bearing trees. For the sake of argument, we will admit that the only bearing trees from which buds can be secured are infested with scale; but rather than take chances on cutting buds from nursery stock, they are taken from the infested orchard. Before using these buds, however, the pest is killed by following formulas for fumigation recommended by our horticultural commissioners. When the trees are ready for the market, scale is found on them, and again precautionary measures for killing it are followed.

After doing all this, is the nurseryman not entitled to be fairly and squarely dealt with? Do you know what happens in many cases? A county commissioner who examines the trees finds scale on them. He may only have been recently appointed, never has had any practical experience. No doubt he received his job through political preferment. What does he do? Instead of notifying the nurseryman, and giving him an opportunity to investigate the matter first, he rushes to a newspaper office, reports his find, and the next morning there is a detailed account of how the zealous inspector has found insect pests on so-and-so's trees, and that they are infested with everything in the category, from the mysterious vine disease to borers, fungoid diseases, and other pests, whose virulence is magnified by the fertile brain of the reporter. Your inspector reads the article, swells up, and pats himself on the back as an authority. Has he considered for one moment the great wrong he has done the nurseryman? No. Later on it may be discovered that the trees which he said were diseased were found, when submitted to higher authorities, to be all right. He can not repair the injury his report has done, and like all evil reports it takes a long time to explain it away.

The proper course for an inspector to follow in a case of this kind is to correspond with the nurseryman. Call his attention to the condition of his stock. If, on further investigation, it is found to be all right, it should be passed, or if not, then it should either be returned to the nurseryman or destroyed as he may direct.

Men who occupy the positions of horticultural commissioners or inspectors should have had some practical experience. They need not necessarily be entomologists. They should, however, be practical fruit-growers, and know a scale bug from a clam. Before finally entering into their duties, they should receive a few practical suggestions as to the pests commonly found in plant life. Such a man, with ordinary common sense, can be of great benefit to any community. He can advise fruit-growers how to prune their trees, and serve them in many other ways, and his services will prove to be of inestimable value to the entire community. A man who has once acquired experience as horticultural commissioner through constant study and close observation should, as long as he gives proper attention to his duties, be retained in office, and not ousted whenever there is a change in the political complexion of a Board of Supervisors.

The horticultural laws of this State were framed for the purpose of protecting our fruit interests as a whole, and were not enacted for restraining any set of men from conducting their business. They have been grossly misconstrued in many counties of the State, and special ordinances have been passed which have for their object no other purpose than to hamper a nurseryman in conducting his business. Either the nursery business of this State is, or is not, a legitimate business. It is needless to dwell on this point. All that can be said of it is, that many of the county ordinances as they exist at present should be annulled. That they are unconstitutional there can be no question. The great difficulty which arises is for a nurseryman single-handed to fight them. If many more of these obnoxious ordinances are passed, it will finally mean that the business of a nurseryman will be confined to his own particular county. No large nursery business can exist under such conditions, for trees and vines are propagated not only for planting in his section of the State, but also for distribution in other parts of the country and in foreign countries as well. No possible objection can be made in general to our State horticultural law, and if this law was enforced among fruit-growers, owners of parks, and in cities where shrubbery and plants are covered with pests, much more good would be accomplished to the community at large than where an inspector devotes all his energies toward retarding the business of a nurseryman. As a class the nurserymen of the United States exercise more care, are more particular in conducting their business, than any other set of men in the fruit business. In spite of all their efforts to comply with the law for their own interests, if there were no other reasons, measures are enforced against them, from which, unless there is some concerted action on their part, there seems to be no recourse at present.

Every encouragement should be given to the enforcement of the horticultural laws of this or any other State. These laws should deal with all horticultural interests on an even basis. They should not be framed in such a manner as to restrict trade by making it compulsory on a nurseryman to take out licenses for several thousand dollars in every county in which he attempts to sell trees. Such laws have been enacted in several counties in California, and similar laws are being enacted in other States. The sooner such measures are withdrawn, the better it will be for the entire fruit-growing community, for such prohibitive measures prevent a nurseryman from entering new fields and selling his stock.

The only good reason which any inspector or commissioner can give for holding up stock, and preventing its entry, is when he finds it infested with insect pests which are a menace to the fruit interests. To prevent nursery stock entering any particular section because a certain insect pest has been found on trees of the same variety in this district, although the trees which have been shipped are free from this disease or any other, for that matter, is a gross perversion of justice, and should not be permitted.

A decision rendered by H. Z. Austin, Superior Judge of Fresno County, on the subject of special county ordinances and the condemnation of nursery stock, is so apropos on this occasion that I have taken the liberty of quoting it. It covers the ground in such a concise, clear, and forcible manner that it is worthy of being carefully digested. In this particular case, Fresno County was compelled to pay for the cuttings destroyed by the Horticultural Commissioners, and since then no stock has been condemned, unless it has been found to be diseased or infested with pests.

On the 15th day of February, 1901, the Board of Supervisors of the county of Fresno passed an ordinance, No. 97, which, among other things, provided that no person or firm shall import or bring into the county of Fresno any grapevine roots or rootings of any species or variety whatsoever from without the said county of Fresno. The same ordinance also provided that no person or firm should transport or in any-wise deliver into the county of Fresno any bud or cutting of any grapevine of any species or variety whatsoever from any portion of the State of California south of the line forming the north boundary line of San Luis Obispo, Kern, and San Bernardino counties, and from no district within the State of California north of the north boundary line of Alameda, San Joaquin, Calaveras, and Alpine counties, with the exception of Sonoma and Napa counties. After this ordinance had been duly passed, Clara L. Pew imported into the county of Fresno certain grapevine cuttings from Contra Costa Coumty, a county outside of the limits mentioned in the ordinance. The county commissioners seized these cuttings and burned the same, claiming that they had a right to do this under the ordinance. Clara L. Pew thereupon sued the county of Fresno for damages, and the case came before the court upon the validity of the ordinance. Judge H. Z. Austin, in passing upon this ordinance, used the following language:

> The particular points upon which it is claimed that the ordinance is illegal and void are because it is in restraint of trade, and permits the confiscation of property without due process of law.
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> I am of the opinion that both these points are well taken, for reasons briefly stated, as follows:
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> The ordinance purports to prohibit the bringing into, or receiving within this county of any "grapevine roots or rootings" absolutely, no matter where grown or produced, and without reference to the question as to whether they are healthy or diseased, or whether their receipt or importation into this county could or would be detrimental or beneficial to the horticultural interests of the county. The same prohibition is made as to limbs, buds, and cuttings not produced within certain designated portions of this State. As to these articles there is likewise no limitation to the prohibition, and all, healthy as well as diseased, are included in the prohibition. It will not be denied that it is within the power, and it might be said that it is the plain duty, of the board to protect, in all legal ways, the orchards and vineyards from infection by importations of diseased nursery stock, but I can find no authority of law that would justify or allow prohibition of trade in healthy and unobjectionable nursery stock. The vice of the ordinance is that it makes no distinction in this regard, condemns the healthy as well as the diseased. I do not think the power of the board to declare a quarantine against diseased nursery stock outside of this county could be questioned, if done by an ordinance drawn with due regard for the Constitution and general laws of the State. In this connection it is but proper to say, however, that any attempt to distend or enlarge the powers granted to County Boards of Horticultural Commissioners by the general laws of the State is exceedingly dangerous. (See Act of March 31, 1897, and also the Horticultural Quarantine Law of March 11, 1899.) These laws, supported by decisions of courts construing them, seem to furnish means for the due and legal accomplishment of everything requisite for the protection of our orchards and vineyards.
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> I am also of the opinion that the power attempted to be given to the horticultural commissioners by the ordinance in question to destroy roots, rootings, et cetera, irrespective of the fact as to whether they are healthy or diseased, is an unauthorized delegation of power, and amounts to depriving a person of property without due process of law. It attempts to authorize the horticultural commissioners to seize and destroy the property without warrant or process, to condemn it without proof, or the observance of any judicial form, and to destroy it without notice of any kind. Such enactment can not be harmonized with those constitutional guaranties which are supposed to secure every one within the State in his rights of liberty and property. "No man," says Mr. Cooley in his work on Constitutional Limitations, "can by his misconduct forfeit his property unless steps are taken to have the forfeiture declared in due judicial proceeding. For-

feiture of rights or property can not be adjudged by legislative act; and confiscation without judicial hearing and judgment, after due notice, would be void, as not due process of law." This most necessary principle of constitutional law is violated in the powers given by the ordinance in question. The determination of questions of this character, and the liability of property to seizure and confiscation, is a judicial proceeding, and judicial proceedings are required by the Constitution to be exercised by courts of justice, and can only be reached through the forms of law, upon a regular hearing. The law of the land in judicial proceedings requires a hearing before condemnation and judgment before destruction of the property of another.

For these reasons, I am of the opinion that Ordinance No. 97 of the Board of Supervisors is illegal and void, and furnishes no defense to the acts complained of.

Similar ordinances have been passed in several counties in this State, but the practical workings of such ordinances fail to reach the desired results. Such ordinances may benefit some nurserymen and injure others, but the farmer is always the loser, as competition is prevented, and in many cases the best nursery stock excluded. Vine and tree diseases are more or less prevalent everywhere, and the best results can be obtained only by a personal inspection, by a competent expert, who will accept or reject each shipment on the merits, and not on geographical limits. This is the spirit of the law as appears by the decision of Judge Austin, from which I have already quoted, and I might add that this decision is based upon numerous decisions in this and other States. There should be one State law controlling this subject, and it should be broad enough to protect both nurseryman and farmer, and Boards of Supervisors should not be allowed to pass local or special laws. Less politics and more learning will benefit both the nurseryman and the planters.

THE ENTOMOLOGICAL EQUIPMENT OF THE HORTICULTURAL COMMISSIONER.

By PROF. C. W. WOODWORTH, of Berkeley.

California has led the world in the effort to control its fruit pests. At the time the first laws were enacted establishing our system of Horticultural Commissioners, they placed us well in the lead in the matter of practical control. We have, however, remained practically stationary through two decades, while other States have advanced, until now only State pride prevents us acknowledging that we have been left behind. Many have expressed their conviction that our laws should be radically changed and brought in line with the progress of other States, if not to new and advanced ground which will again assure us the leadership. We ought to be able to command the services of the best men and draw them from any part of the world, instead of seeing our island neighbors deplete our own forces. We should add to our system of County and State horticultural officers the two items entirely neglected in the past, a department for investigation and a scheme of centralized control. These are the two points which have given efficiency to the Eastern inspection systems.

But it is not my purpose to-day to discuss the subject of horticultural legislation, but rather the means of making our present system more efficient—particularly to indicate what might be done in the study of insects.

In every department of human effort the tendency of the age is to insist upon a special preparation of those undertaking any work, because of the greater average efficiency of those thus trained. The application of this principle to the office of Horticultural Commissioner is something that can not be too strongly insisted upon. Laws are not the really important thing. The personnel of those entrusted with their administration largely determines whether laws are useful or not. A strong public sentiment which will insist that the Horticultural Commissioner shall be a man specially qualified for his position will go far toward making the position worthy the best efforts of the best equipped men.

In comparatively few instances, in the past, has the man appointed to this position made any special effort to prepare, except in the most general and superficial manner, for the duties of the office. Usually he has first secured the place, and then attempted to inform himself upon the subjects in which his duties require knowledge. In many cases commissioners have after a time become quite well informed, and have proven efficient and valuable officers and continued long in the service to the full satisfaction of their constituents. Whatever of success has been attained in this work in this State has been due to men of this class. These men have felt the need of knowledge so keenly that they have fitted themselves in the hard school of experience. They will be doubtless the first to appreciate the importance of insisting upon the appointment of properly qualified men to these positions.

Perhaps none will take issue against this general principle, but may be inclined to doubt the possibility of finding or commanding specially qualified men, and may differ as to what constitutes the most important qualifications for the office.

Some years ago, in the course of a conversation with a gentleman who has charge of the administration of one of the most effective State systems of horticultural inspection, he remarked that he regarded the most important qualification of an inspector to be honesty. He considered it so important, that he would be willing to overlook almost any deficiency in technical knowledge, if he could be assured that this quality of a man's character was highly developed. In a centralized system like the one which he controlled, where every determination made in the course of inspection work was checked up in the main office, the possession of technical knowledge may be less essential than here; still here, as well as there, honesty must be reckoned as the qualification par excellence.

Honesty is of many kinds, as well as being possessed in all degrees. The quality of honesty required to make a good Horticultural Commissioner is what we may call scientific honesty. We have all doubtless known men strictly honest in money matters, for instance, whose conscience seemed wholly asleep in religious or political affairs. Honesty of any kind is something that must be developed and trained before it will be large enough to be conspicuous. A high degree of scientific honesty is really a rare thing, though it is no harder to develop than any other kind.

The most important item in the work of a Horticultural Commissioner is the determination of scientific facts. If he is not an expert, he is able to do nothing well. We are all so full of prejudices; so apt to jump at conclusions without adequate knowledge; so thoroughly unreliable in our ordinary observations, that unless a man has had a training specially developing his conscience in such matters, his word is not worthy of belief. No matter how honest he may be in other matters, he should not be trusted under oath, if he attempts, without first becoming an expert, to decide such matters as a Horticultural Commissioner is continually required to decide in the performance of his duties.

An expert is one whose training has been such that he can say a thing is so, and say it honestly. He knows what is necessary to do to determine the truth about the matter and takes the pains to learn the truth. As long as public opinion fails to insist upon the necessity of experts in this office, a great many of the appointees will fail to appreciate their need of growth.

Do not misconstrue what has just been said as containing the suggestion that there is or has been dishonesty in this matter. Such an insinuation is entirely foreign to my thoughts. Between the form of immorality which we call dishonesty, and the positive righteousness of honesty, there is a broad neutral zone of undeveloped powers, incapable of either good or evil. The office of Horticultural Commissioner has been filled as a rule with men remarkably free from dishonesty, even those who have never qualified themselves for their work, and I have been glad to know and number among my friends a large number of these officers.

Those who are now Horticultural Commissioners and have become expert enough to give satisfaction in the administration of their office should never be replaced by others for political or any other trivial cause. They have become valuable men, and have a knowledge of the local situation that no one else possesses, and their successors must acquire it before they will become most effective.

When a new unqualified officer is appointed, there will be an interval while the new man is trying to make himself capable, during which very serious losses may occur, through his ignorance. If such risks are not to be taken, a man already an expert must be chosen.

Insects are responsible for such a large part of the work of a Horticultural Commissioner that the entomological equipment represents no small factor in the qualifications he should possess. A man may be a very good entomologist, however, and possess very little knowledge that will aid him as a commissioner. Entomology is so large a subject that few go further than to familiarize themselves with some small division of it. Most of those studying the subject have nothing to do with injurious forms. Being an entomologist, therefore, may not fit a person for the horticultural work with insects, any more than being a geologist or a chemist. Scientific work of any kind is a real preparation nevertheless, because a thorough study of any science can not fail to develop to a high degree the quality which we have denominated "scientific honesty."

Among the things a Horticultural Commissioner should possess is a sufficient knowledge of the injurious insects to apprehend all suspicious characters. This requires that he shall know something of the habits of all groups of insects and be able to recognize them in all their stages. Of course, in special cases he can submit specimens for determination to those who have made a special study of the particular group, and should avail himself very frequently of this help; but this will not do for the routine of everyday work, and after a specimen has been authentically determined the work becomes permanently valuable only to the extent that one understands how it differs from other allied forms and may thus become capable of certainly identifying it again.

A much more important matter than a knowledge of species and habits is the ability to appreciate the effect of external conditions on insects. The fact that an insect is injurious in one situation is no proof that it will be so in another locality; nor its harmlessness elsewhere, full assurance of its behavior here.

No insect is uniformly injurious. The codling-moth, for instance, is capable of producing a loss averaging fully half the crop in some sections, and in exceptional years taking almost everything, while in the State as a whole it scarcely averages twenty-five per cent, and in several regions there are considerable areas so entirely free from loss that one per cent would be a large estimate. The San José scale, which has given this district a bad name, has long ago ceased to be a very troublesome insect. Northward along the bay it is only periodically a serious pest, and at Berkeley it is practically unknown, being replaced by the much less fatal species, the greedy scale.

Thus we might show an extreme range of variation for all our injurious species even within the limits of this State. So diverse are our conditions that no general plan of fruit-pest control can be devised for the State, nor for all parts of a single county.

The Horticultural Commissioner is not simply a police officer, delegated to enforce specific laws. The necessities of the case make him much more than that. The purpose of the law is to accomplish as much good as possible, and the provisions are intended to be elastic enough to enable him to do what is wisest in each particular case. This large amount of discretion given him, imposes on him a correspondingly great responsibility. He must decide in every case whether this insect, under these conditions, constitutes a real menace to the horticultural interests of his district or of the State. An error in either direction involves a financial loss to the citizens of the State. An active commissioner is quite likely to decide doubtful cases in a way involving a small immediate loss, rather than take the risk of greater future losses; and the more passive one will take these risks rather than produce unpleasantness by a positive stand requiring the destruction of property. In either case there is easily possible a loss far greater than the amount that would be necessary to pay in order to employ continuously an expert of the highest quality.

At this time of the world, when reading matter is so abundant and so cheap, we might suppose that every commissioner would have a well-selected library of the standard books dealing with his professional duties, but the fact is—no, I will spare the feelings of those commissioners who may be present, and refrain from saying how bad it is.

Perhaps some have been so impressed with the fact that California is different from any other part of the country, and fear to fill their minds with things that will not apply under our conditions. They may be afraid of learning entomological heresies. While it is true that one must make due allowance for our climate, there is no excuse for remaining ignorant of the best knowledge of other countries.

Every commissioner should possess a set of the standard entomological textbooks, and keep abreast of the current entomological work of the world. For the latter purpose, I would recommend the Experiment Station Record, published by the United States Department of Agriculture. This comes twelve times a year and contains notices and reviews of everything of importance in economic entomology appearing anywhere in the world.

The University has tried to do what it can to aid commissioners in their work, and in the preparation of those doing, or desiring to do, horticultural inspection work. Possibly in conclusion I can enumerate these efforts, as a reminder of how earnestly and sincerely we have endeavored to be of service. These activities may be grouped as follows:

Publications.—The Experiment Station of the University issues reports, bulletins, and circulars on all sorts of agricultural topics, many of which bear directly on a Commissioner's work. These will be sent free to any one desiring them. We can furnish a limited number to Commissioners for distribution to those with whom they deal in their work, and will be glad to send any bulletins still in print to names furnished by the Commissioners.

Correspondence.—The University holds itself ready to answer direct inquiries as far as it is able, and many Commissioners have availed themselves of this service. Answers are made as promptly and fully as possible, and no one should have any hesitation in applying, though it not infrequently happens that questions will be asked that we can not answer satisfactorily.

Coöperative Investigation.—Where a problem presents itself which can not be answered, if it is of sufficient importance, the Experiment Station is ready to assist in an attempt to discover the answer by a careful investigation of the subject. We have coöperated with the Horticultural Commissioners of several counties. Our usual arrangements for coöperative work have been that the Station furnish one or more men who will work under my direct supervision, and those coöperating will pay the local expenses. In the case of coöperation with Horticultural Commissioners, the man delegated for the work often is appointed an inspector, because it is easier to arrange for an inspector's salary than to get an allowance for expenses from the Supervisors. Finally, the Station publishes the result of the study, giving due credit to the officers coöperating.

Class Instruction.—The University has arranged a way by which a person who is mature enough may enter the Agricultural College as a special student without examination. Thus persons who perhaps could not meet the requirements for regular admission, but who have serious intentions, are admitted to the same laboratories and classrooms as the regular students. Everything that we can offer in the way of instruction is freely offered to any who may wish in this way to prepare themselves better for their work. The short course given each winter is designed particularly for special students having very little time at their disposal. The instruction in entomology has now been arranged so that a person can enter at any time and find ample work to occupy his attention for a period of any length he may desire, and commissioners or prospective commissioners are particularly welcome. The new laboratories which have been planned, and we hope will soon be constructed, will be the most complete and best arranged building for instruction in this subject to be found in the world.

Opportunities for Research.—In connection with the instruction at Berkeley, there is opportunity for actual field experience in research work after a student has qualified himself therefor. This is in connection with the coöperative work previously alluded to. Thus far the demand for assistance of this kind has greatly exceeded our ability to supply the men capable of doing the work required. Such students are stationed for a time in the region where the problem in hand can best be studied; they have everything in the way of scientific apparatus and the use of orchards—indeed, all that is necessary for the study, and when results are secured, a place for publication which will at once give them a standing among the economic entomologists of the country. A training of this kind I conceive to be none too elaborate a preparation for the work of a Horticultural Commissioner.

Reading Courses.—There are many who are ambitious, but who can not take advantage of the regular university work. For such, a reading course has been prepared, intended to acquaint the reader with a good selection of the best literature on economic entomology. A great many of our horticultural commissioners are now availing themselves of this course. We have had in all something over two hundred applicants for this course; more, indeed, than we have thus far been able to provide books for. Those who conscientiously follow this course will have a good foundation in this science.

Collections.—The Experiment Station will soon issue a circular giving directions for collecting insects, and we will make the offer to any desiring to make collections for themselves to furnish them a set of specimens carefully mounted and named, in return for specimens they may collect and send for the University collection. This proposition will be made particularly for the purpose of aiding country schools and county horticultural officers in obtaining named sets of their common insects. These collections will be furnished in neat boxes, suitable for exhibition on the wall of the schoolroom or office, and should be found very useful for the identification of specimens brought in for comparison.

These efforts of the Entomological Department of the University are based on the thought which has been the burden of this paper—the belief that the future demands more of us than the past has received, and that in the practical work of insect control greater evidence of progress is imperatively demanded.

PEAR BLIGHT IN NORTHERN CALIFORNIA.

By PROF. RALPH E. SMITH, of Berkeley.

It is not the purpose of the writer to describe, or discuss, in this paper the nature and history of the well-known pear-tree disease called "blight," since this subject has been fully covered in various agricultural publications at different times. The previous history of the disease in California, the destructive effects produced by it, particularly in the district centering about Fresno and Kings counties, and the general nature and appearance of the blight, are but too well known to almost every pear-grower in the State, and need no special consideration at this time. It is rather my purpose at present to consider in a practical way a more recent development of the subject which is of the greatest importance to one of our best and largest fruit industries.

Previous to 1904 the pear-growers of the Sacramento Valley had looked with complacent sympathy upon the situation in the upper San Joaquin region, in respect to the destruction of the orchards by blight. The conditions then existing are well stated in the report of the State Board of Horticulture for 1901-1902, from which I quote, as follows: "Radiating from these counties (Kings, Kern, and Tulare) the disease seems to decrease in virulence, until in the more northern counties it is unknown. North of Fresno the disease has not obtained any serious foothold. It is not general, nor is any great damage apprehended from it."

The great prevalence of blight in the portion of the State just mentioned, and the fact that year after year passed with no spread of the disease toward the north being observed, gave rise to the general belief that climatic or other natural conditions produced immunity of the northern orchards from the blight, since otherwise a more rapid spread would be expected. In the spring of 1904 this rosy illusion was rudely shattered. Reports began to come from many points far north of the previous blight limit, of something new affecting the pear trees. This trouble had the appearance of blight, and was soon determined by various authorities to be the typical disease. The reports came from various localities, indicating a considerably widespread outbreak, and one of so serious a nature that the writer, in the latter part of June, made a tour of that part of the Sacramento Valley when pears were growing, to determine the extent of the blight occurrence and the nature of the situation in general. The conditions found were stated in an article published in the principal horticultural papers, as follows:

"That the true blight, identical with that which has devastated the pear orchards of Fresno, Kings, Tulare, and Kern counties, has occurred this year in all the counties of the Sacramento Valley, there is no question. The writer has personally visited numerous orchards in Solano, Yolo, Colusa, Glenn, Tehama, Shasta, Sacramento, and Contra Costa counties, and found an abundance of the typical disease scattered all over this section of the State. From Vacaville to Colfax, and from Martinez up to Anderson, the blight is present in numerous orchards. In a few the disease has not yet appeared, in some it is very severe, but in most cases the trees are slightly affected in a branch or twig here and there. In this year's crop no great loss will result; scarcely any in most cases; the danger is for the future."

This serious situation did not go unnoticed by those whose duties include the consideration of just such matters, and the Horticultural Commissioners of most of the counties mentioned became active in advising and enforcing the best known means of blight control. This consisted in cutting out the blighted twigs in order thereby to check the spread of the disease. Sacramento County was particularly active in this direction, as the most general appearance of the disease occurred in that county, in the reclamation districts below Sacramento City. Reports of pear-blight occurrence in the Sacramento Valley were soon followed by similar news from San Luis Obispo County, where another very serious outbreak developed, and appears to be spreading up the coast from south to north. As the summer went on, the writer, being much in the field for various purposes in connection with plant-disease work, was able to follow quite closely the development of the blight and the results of efforts made to suppress it. It is, therefore, possible to speak with some degree of certainty as to the situation now, at the close of the season, and of the outlook for the future.

We know in general from the history of pear blight in California that it is the most destructive plant disease of any which occurred within our borders. We know that no method of treatment has succeeded in preventing the ruin of the pear industry in this State, wherever the blight became abundant. We now know that the blight is present, and generally distributed, in our best and greatest pear-growing section, the Sacramento Valley. This is the situation in a nutshell, laying aside all theories, hopes, and speculations, either of good or bad. The disease is a bad one; it has not been satisfactorily controlled in California; it has now appeared where very great damage may result.

According to our best knowledge of pear blight, it is caused by a bacterial organism which infects the young growth of the pear tree in spring, developing in the succulent cambium layer, or inner bark, spreading down into the twigs and larger branches, and thus causing them to wither and die and ruining the tree. Infection takes place largely in the blossoms, whither the germs of the disease are brought by bees and other insects. From the affected parts, a sticky juice or gum is produced, which contains the germs of the blight and attracts the insects. Such insects are supposed to carry the infection to the blossoms, and thus spread the blight from tree to tree. Based on this knowledge of the origin and spread of the disease is the pruning or cutting-out method of control, with the idea of removing all affected wood at the end of the season, so that there will be nothing left to start the disease next spring. This method has proven successful in many parts of the country and the pear blight effectually controlled thereby. In California we can scarcely doubt that blossom-visiting insects are largely instrumental in spreading the disease, yet the widespread occurrence of blight last spring, in regions more than two hundred miles from any known source of infection, is truly remarkable. While we can not be positive that there had been no pear blight before in the Sacramento Valley, it is practically certain that the great majority of the orchards affected were hitherto free from the disease, and that it spread a great many miles during the past season, more in fact than in all the previous years of pear blight in California put together. Why and how this occurred is one of the questions which need to be answered, if the disease is to be controlled satisfactorily in this State. The cutting-out method of blight suppression, the only one at all effective at present, has been practiced with various degrees of thoroughness in all parts of the State where the disease has occurred. It is perhaps too early to judge of the results of cutting done in the Sacramento Valley this summer, although inspection at present shows about as much blight as ever all over the valley, except where cutting has been done very recently. The advisability of general summer cutting by our average farm labor, where the blight is actively spreading, and in its most virulent condition, is somewhat doubtful. Certainly, very thorough cutting in December, when the green leaves have fallen, is advisable, and to be strongly urged upon every pear-grower. Whether this alone, however, can ever be made a satisfactory means of thorough control in California is open to serious doubts, judging from present conditions in the upper San Joaquin. It may be said that the work was not thoroughly done, that this or that individual orchard is in better condition than the average; but taking the general results in this section as a standard, the present condition of the pear orchards and pear business in Fresno and Kings counties, as compared with that of a few years ago, we can reach but one conclusion as to the effectiveness of this treatment. Apparently the spread of the disease and its progress in the tree are so rapid in our climate that thorough cutting out results at last in the extermination of the tree, rather than that of the disease.

The possibility of the blight dying out, or subsiding of itself, may be and is being considered. The opinion is frequently expressed that the disease has run its course in the San Joaquin Valley and is dying out. Whether this be true or not, such a result offers little hope to the regions more recently affected, if the blight is to have the same destructive effect before dying out as in the lower counties. In short, let the Sacramento Valley pear-grower, in whose orchard the disease has just started, visit Fresno, Hanford, or Visalia, examine all the pear orchards, good and bad, remaining there, and decide for himself whether the blight is controllable by present methods, or its destructiveness is passing away.

Methods of control other than that mentioned have been generally put aside as impracticable, or not adapted to the nature of the disease.

In this respect, however, it is my opinion that too much has been taken for granted. In the words of a recent publication, for instance: "Spraying, fumigating, and all other external remedies are utterly worthless, as the disease is in the sap-wood of the tree, protected from all external influences." Yet, on the same page, we read: "There is little question but that our honey bees are an important source of infection, flying as they do from blossom to blossom, and carrying the germ to the most susceptible point of entry of the plant." If then, we may well ask, the disease is "protected from all external agencies," and its germs on that account not to be reached by any spray or similar treatment, how does the honey bee obtain such germs to carry to the blossoms? The disease once started is, of course, located inside the tissues of the plant, but so is the peach curl, the asparagus rust, the potato mildew, and every fungous disease with very few exceptions, yet these we successfully treat by spray methods, destroying the spores or germs before infection takes place. In no plant disease do we expect to destroy the parasite once in the tissues, but in every case, fungous or bacterial, germs which are to spread the disease to other plants must come to the surface and are there destroyed by successful spraying before further infection can take place. Why, then, if the germ of pear blight is accessible to the honey bee, is it so certain that a proper spray, at the proper time, might not reach and destroy the same source of infection? This is but one suggestion as to the outlook for better methods of blight control. Too little effort has been made in this direction. That the disease is a very destructive one, or that it is bacterial, and develops internally, does not preclude its successful control by some practical method, or justify the abandonment of a valuable industry without more of an effort than has yet been put forth in California to solve this problem.

The investigation of plant diseases is the work of the specialist in that study, with the assistance and coöperation of growers and practical men. Too little attention has been paid to this subject in California, where, of all States, it is of most importance. When one considers a State like Connecticut, smaller than many of our single counties, with two Experiment Stations; or a region like New England, of little agricultural importance and an area not more than half that of our State, with seven Experiment Stations; while in California no provision whatever has been made by the State for experimental investigation of plant diseases other than those caused by insects, is it to be wondered that in regard to pear blight, walnut blight, vine diseases, root knot, root rot, citrus troubles, apple diseases, grain smuts, and a host of their kind, we are still largely in the dark ?

In the case of the pear blight, a thorough investigation under State control appears to me to be most urgent. The industry is one of great importance to the whole State, and concerns more or less directly a large share of its population. The Bartlett pear is our most valuable deciduous fruit, and the Sacramento Valley its greatest seat of production. What hurts this business, hurts California. The blight may or may not prove as destructive here as in the San Joaquin, but the danger is too near, and too real, to be made light of. Better too much than too little, or too late, in such a matter.

To investigate this matter effectively and thoroughly, with regard to all parts of the region concerned, will require assistants for carrying out field and laboratory work, giving their chief attention to this alone, necessary equipment, appliances, and materials, and provision for the various considerable expenses attached to such work, if it is carried on vigorously, and on a scale proportionate to the importance of the problem. A department of plant diseases having been recently created at the State University by the enterprise of the asparagus-growers, the work of which is particularly along this line, the only obstacle to proceeding with a pear-blight investigation is the matter of financial support. Suggestions have been made that this be afforded by the growers themselves, by the several counties most concerned, or by the State. The last proposition seems most feasible. To collect a subscription or assessment from various growers would limit the work by personal considerations, not desirable in such a case. To depend on the action of various county officials would also prevent a uniform effort and application of results. In the Legislature, support should come from every pear-growing section for such a proposition as this, and work could be carried on with State support, wherever most desirable or necessary, without regard to personal or single county interests. With such an investigation, supported by the State, work could also be done incidentally on many other similar troubles, occurring in the same localities, and a department of plant disease investigation, worthy of the name, permanently established.

THE PROBLEM OF INSECT CONTROL.

By C. A. DAY, of Pasadena.

This problem is one of many phases, each species of injurious insect in itself constituting a minor problem of no small importance. Insects comprise four fifths of the animal kingdom, numbering upward of two hundred thousand species; of these many species are injurious and attack fruits and farm crops and forest trees. In their methods of attack they are divided into four classes: first, root-feeding insects, which attack roots of plants; second, boring insects, which bore into the stem or trunk, roots, leaves and fruit; third, sap-sucking insects, which puncture the leaves and stems to obtain their food; fourth, defoliating insects, which eat the leaves and other green parts of the plant. No part of the plant or tree is exempt from the attack of insect enemies. The importance of insect control is evidenced in the yearly loss of vast sums to agriculture from the ravages of injurious insects which prey upon fruit and farm crops. In addition to this loss a considerable amount is expended yearly in applying remedies that, in many cases, are only of temporary effect and requiring repeated application.

In a state of nature we find on an average a pretty even balance maintained in insect and plant life; that birds, insects, and plants are closely related; and that those insect species which are vegetable feeders are in a measure held in check by insect-eating birds and parasitic and predaceous insects. There are times when nature's balance is temporarily upset. There are years classed as insect years, when certain species of insects, from a temporary reduction of natural enemies, increased food supply, and climatic conditions favorable to their propagation and increase, become numerous and very destructive to certain species of plants. Undisturbed, nature by her methods of geographical distribution and means of diffusion of insect, bird, and plant species, is able to maintain on an average a fairly even balance of insect life; but in nature's methods of geographical distribution and means of diffusion, there seems to be no provision made for the sudden transportation of insect and plant species to distant regions.

The careless transportation, by man's agency, of a vegetable-feeding insect from one continent to another, where it is freed from the presence and check of its natural enemies, results in the destroying of nature's balance. In this connection it is important to note the natural or geographical distribution of insects and the means employed by nature in their diffusion. In the geographical distribution of insects Packard says: "The polar, temperate, and tropical zones each have their distinct insect fauna, and each continent is inhabited by a distinct assemblage of insects. The limits of these insect fauna are determined by temperature and natural boundaries, such as the ocean and mountain ranges. Mountain barriers, inland seas, deserts, and peculiarities in the flora, or collection of plants peculiar to a certain district, are boundaries of a secondary importance in limiting the distribution of species. The whole region of the United States is divided by meridional or nearly meridional lines into three or perhaps four great zoölogical districts, distinguished each by numerous peculiar genera and species, which with but few exceptions do not extend into the contagious districts. The eastern one of these extends from the Atlantic Ocean to the arid prairies of the Central West. The central district extends from the western limits of the eastern district to the Rocky Mountains. The western district is the maritime slope of the continent to the Pacific Ocean. In the Pacific district a small number of species are confined to a small region of country; most species occur in considerable numbers and in traveling even one hundred miles it is found that the most abundant species are replaced by others, in many instances very similar to them."

This variation in the insect fauna of the Pacific Slope is probably in part due to the variation in temperature and to the humidity of the atmosphere. In a state of nature insects are diffused by winds, rivers, and ocean currents. Protected as we are on one side by vast mountain ranges and on the other by the broad Pacific Ocean, with no tropical or temperate lands near our coast, we are protected from the introduction of foreign insects by nature's means of diffusion. Prior to 1880 there was no inspection of plants or nursery stock coming into the State from foreign countries, and prior to this date many of our most troublesome and destructive insects were introduced on nursery stock and fruit. Many of these insects through the agency of man had become cosmopolitan and widely distributed throughout all agricultural countries. These introduced species have with us been very injurious, because their natural enemies which held them in check in their home section have been left behind, and, freed from the check which nature had placed on them, they have increased enormously and have become the most injurious of our insect pests. The true remedy in this case is to restore nature's balance by the introduction of their parasitic enemies. Prevention is cheaper than the cure; therefore, an effective quarantine should be maintained by our State Horticultural Commission.

Another strong argument in favor of prevention is that when an insect is once introduced into a section and becomes thoroughly established there is no known means of exterminating it; even the most effective of parasites can do no more than control any species of insect, and the appearance of a secondary parasite may greatly retard the work of effective control, if not defeat it. The appearance of a secondary parasite, attacking the *Scutellista* in parts of southern California, threatens to partly nullify in certain sections the work of this chalcid fly on the black scale.

Another argument in favor of prevention is the cost of applying remedies such as fumigation and spraying where parasites are not at hand for the work of control. Again, where the insects to be treated have come to infest weeds, street trees, native plants and shrubs, and trees in a state of nature, no matter how thorough the treatment of the orchard may be, it is soon reinfested from these sources of infection. Then again remedies are not always as effective as they should be. A certain treatment in the hands of a scientific expert may be successful, but it is so because of the scientific exactness in securing the right quality of material, the proper quantity of each ingredient used, the proper uniting of the same, and its thorough application. The same treatment in the hands of the average farmer or commercial agent will not give the same good results as when administered by the expert. The margin between a remedy strong enough to destroy the insect and at the same time not injure the foliage or wood of the plant or tree is often very slight and requires experience, good judgment, and scientific exactness in all the details of the treatment to make it successful. The possible strength of the treatment depends also upon the health, condition and vitality of the tree. Remedies, expensive, not always satisfactory, and sometimes injurious, are the means of last resort, when prevention has failed and effective parasites are not at hand.

Another preventive measure is the use of the resistant stock of native grapes for protection against phylloxera and the use of resistant apple stock as a protection against woolly aphis.

Our State quarantine protects us on our seaboard at San Francisco, the principal port of entry, from importation of insects from foreign countries, but the county quarantine maintained by our County Horticultural Commissioners is no less important to protect the fruit-growers of the State from the importation of insect pests from the adjoining country of Mexico, and from Florida and other parts of the United States, among which are the gypsy-moth of New England, the white-fly of Florida, and the Morelos orange-maggot of Mexico. In the way of preventive measures the work of the County Horticultural Commissioners is important in preventing the spread of local infection of serious insect pests that without official control would become general and widespread. As an instance, some three and a half years ago the different County Boards of Horticulture of southern California united in securing ordinances in each county establishing a quarantine against the phylloxera which infests the grapevines of central and northern California. At this time certain interested nurserymen protested strongly against this quarantine, and at least one of our agricultural papers vigorously attacked and ridiculed the action taken by these boards. Time has proven the wisdom of the action taken by the County Boards of Horticulture of southern California. The vineyardists of the southern part of the State have from the first been a unit in support of this quarantine.

There are three important factors employed within the State in the work of insect control: The State Horticultural Commission, the County Horticultural Commissioners, and the Agricultural Department of the State University.

While our State Horticultural Commission and our County Horticultural Commissions are instituted under separate acts of the Legislature, the Act which creates the State Commission of Horticulture places the County Boards of Horticulture in matters of quarantine under the direction of the State Commissioner; also making the said State Commissioner ex-officio member of all County Boards of Horticulture and providing that the County Boards shall report to the State Horticultural

Commission. This is as it should be. In a case of emergency the County Boards of Horticulture are placed at the command of the State Commissioner of Horticulture, centralizing the efforts for effective quarantine within the State.

The County Horticultural Commissioners are very important as field-workers, in the identification and classification of insects and the study of their habits, the prescribing of remedies and their proper and timely application, preventing the spread of present infestation, and aiding the State Commission in the matter of State quarantine and the introduction of parasitic insects. From the personality of the county commissions have come our former State quarantine official, Mr. Alexander Craw, and his successor, Mr. Ehrhorn. Two of our most valuable remedies, the rosin wash and fumigation with cyanide, are discoveries made by members of county commissions.

The Agricultural Department of the State University has rendered valuable assistance to the fruit-growers and farmers of the State, by the investigation of various phases of the insect problem, and the publishing of the results of such investigations in bulletin form for distribution. Some of these investigations have been conducted in coöperation with County Boards of Horticulture and Boards of Supervisors of the various counties.

As a final summing up of this question of insect control I favor the application of remedies for temporary control; the restoring of nature's balance by the introduction of parasitic insects; effective State quarantine to prevent the introduction of insect pests into the State, and a rigid local quarantine for the purpose of confining local infection to its present limits.

There should be a hearty coöperation of the different official departments for insect control, and considering the amount of capital invested in fruit-growing in the State of California and the effective work of imported parasites for insect control in the past, the Legislature of our State should make a liberal appropriation for the work of introduction of parasitic insects.

OBSERVATIONS ON PHYLLOXERA.

BY O. E. BREMNER, OF SONOMA.

As a resident of California, and more particularly of Sonoma County, my duties as a Horticultural Commissioner have led me to the investigation of those diseases attacking the prominent industries of my section. Although we have many of the prevalent diseases found elsewhere attacking other varieties of fruits, our county is so predominantly a wine county that my attention has been more particularly directed to the diseases of the vine, one phase of which I have attempted to discuss in a practical manner in this paper.

Mission vines were introduced into Mexico, according to Bancroft, in about the year 1525. The name by which they were then known, Buenos Carlos (the good Charles), afterwards became changed to Mission. At this time, Cortez, the Governor of Mexico, sought to advance agriculture by the compulsory planting of trees and vines, but later, owing to the rapid growth of the industry, the exportations of wine, olive oil, etc., from Spain began to decrease, and then the mother country sought to cripple the industry by not only forbidding the planting, but by ordering the removal of vines. By other legislation fully as discouraging as this, the industry soon became confined almost entirely to the Mission fathers, and from this time on they seem to be almost wholly responsible for the spread of this industry.

With the establishment of the Mission at San Diego in 1769 by Father Junipero Serra, the first vines were planted in California. As the missions gradually pushed north, the introduction of vines naturally followed until the last mission, at Sonoma, was established in 1822. General Vallejo also speaks of the introduction of a new grape of Madeira stock about this time. Bancroft speaks of the planting of trees and vines at Fort Ross, in Sonoma County, in 1817 from Lima. The apple and cherry trees are still in evidence, but I can find no evidence of the existence of vines.

It is quite certain that European varieties were introduced into this State before 1860, but the first record of wholesale importation of fine varieties I find to have been by Mr. Dresel and Mr. Haraszthy in 1860. Mr. Haraszthy brought Hungarian varieties, Zinfandel, Queen Victoria, Burgundy, Chasselas, and many others varieties. Mr. Dresel brought from France and Germany, Reisling, Traminer, etc. Altogether these gentlemen imported over five hundred of the choicest varieties. It is interesting to know that descendants of these vines on the property of Mr. Carl Dresel of Sonoma produced wine which won him the grand prize for dry wines at St. Louis in 1904. Dresel & Co. also introduced and planted the first resistants on a large scale in 1878.

In about 1860 vines in different localities began to show signs of some disease, which afterwards proved to be phylloxera. The introduction of this insect into this State has given rise to much study and discussion. It would now be a hard matter to say whether it was introduced from Europe or from the Eastern States. It would have been quite as possible to bring phylloxera to this State on Eastern cuttings as it was to carry it to Europe. It was not detected in France until 1865, and was probably introduced there some ten years previous. A Mr. Knouth imported cuttings direct from Nassau, Germany, in 1853. He was troubled with a disease early in the sixties, which he afterwards found to be phylloxera. But, as it is claimed that phylloxera was not introduced into France from this country until about 1853 or 1854, we find ourselves in considerable confusion as to the real origin.

Phylloxera made quite a widespread appearance between 1860 and 1870. In 1873 samples of roots infested with an insect from the vineyard of O. W. Craig were shown at the August meeting of the Viticultural Society of that year, and in 1874 the first phylloxera was shown to be identical with the European insect and was taken from the Herman Wholler vineyard, Sonoma. It was identified a little later at Napa. After this identification the pest seemed to spread with alarming rapidity. In 1881 it was reported to the Viticultural Society by Mr. Morse as having been found in Sonoma, Napa, Solano, Yolo, Placer, and El Dorado counties. By 1885 most of the vineyards in southeastern Sonoma had been killed. Since that time the line of march has been steady and unceasing.

Phylloxera seems to be no respecter of vineyards, so far as European vinifera is concerned. Some varieties resist a little longer, and some soils prove more resistant. The Vine Hill district, formerly reported by leading viticulturists to be immune on account of its sandy soil, is now badly affected. And now I think one is safe in saying that there is no district of any extent in northern and central California which does not show some signs of phylloxera.

There have been many claims as to the first description of the root form of this insect, but the first account of which I have heard was given by a German scientist who, while traveling in the Mississippi Valley in 1806, pulled up a young vine, and the insect he describes attached to the roots in great numbers tallies exactly with that of phylloxera. We are much indebted to European and American scientists, who have not only given us its life history, but also our most valuable information as to checks and remedies. Among these stands preëminently C. V. Riley, then State Entomologist of Missouri, who labored several years to give us its complete life history. But this cycle is not applicable in all its details in this State, as here the complete cycle is gone over in one year, while in the East it takes two years. It also continues to multiply throughout the winter here, while it is dormant there, owing to climatic differences. Although Mr. Lichtenstein, of Montpellier, was the first to hazard the opinion that the phylloxera of Europe was identical with the leaf-gall louse of America, Mr. Riley established the identity of their insect with ours. Mr. Riley also gave us our first facts concerning our resistant American varieties.

A phylloxera-infested vineyard usually begins to show signs of disease the second year of attack. The first symptom observed is the lighter coloring of the foliage and then the reduced growth of the canes. If you wait until the canes are very much reduced, or the vine in an almost dead condition, you may quite often miss the cause, as the phylloxera has migrated to new material. This is not often the case, as in most regions the insects remain on the vines until they are actually dead, and often is this true where the land is heavy and produces more or less fine rootlets near the surface of the ground. About the third year of the attack, after the smaller roots have all been killed, it is here that the winged form appears most abundant. I have found that at least ninety per cent of the winged forms occur on these rootlets, and contrary to what is generally supposed I have found them quite abundant in all sections during the past two years. I feel quite positive that this winged form has been responsible in a great measure for the spread of this insect in most of our districts. I will cite one case. Mr. Greeley had a large vineyard on a hillside facing the southwest. About a mile away was an infested vineyard, and Mr. Greeley says that two years before he noticed his vineyard was affected he observed that the wind blew in his direction from this vineyard. There is a hill midway between the two, so the wind struck his vineyard about halfway up the hillside, and on this line, very plainly to be seen, the phylloxera made its first appearance. It moved from here in an almost unbroken wall. He sprayed with anti-phylloxerine, a powerful stimulant which causes the production of surface rootlets, and on these the winged form made its appearance, and the second year after, the insect was to be found in every section of his vineyard. To show the sudden decrease of crops due to this sudden spread, the first year of spraying there was 150 tons of grapes, the next 65 tons, and the third year about 15 tons. I have noticed the same thing in other stimulated vineyards, and I believe that any strong fertilizer would cause the same results. Now this very strongly convinces me that the very best thing to do when you find your vines very badly infested is to remove at once, burn, and replant with resistants, *then* fertilize. This has been very successfully done in the Italian-Swiss colony, and as a result you can find no plague spots in this vineyard.

I found the undeveloped winged forms first making their appearance early in July. They have the appearance of the ordinary wingless female, but with dark patches on the sides—the wing-pads. After about twenty days or a month in this form they change their molt and come forth a bright yellow, four-winged fly, which lives just long enough to lay its eggs—from one to three days. It grows darker during this time, and at death is nearly brown. I found that they laid their eggs under the most adverse circumstances. Their power of flight is very limited, but they have a trick of springing straight up and spreading their wings so as to catch the wind, and will thus be carried for comparatively long distances.

If you wish to discover phylloxera, pull up a supposedly infested vine about the 1st of August, when the insects are most abundant, and if there are small roots you will find abnormal swellings on them, and on these swellings you will find one or more yellowish-colored insects. If these small roots are destroyed, lift the loose bark on the larger roots or crown and you will usually find a patch of yellowish-orange, which, under an ordinary hand lens, will show many tiny insects, each with its pumping apparatus appropriating as much sap as it can possibly use. It is not this loss of sap that does the damage; but, the vine in attempting to cure the injury, produces swellings, which rot and cause the death of the roots. If the vine is nearly dead the phylloxera may have left, and you will have to judge by certain unmistakable signs on the dead roots.

We always say that the phylloxera attacks the light land first; but it is the light land that is on the hillsides, and here the winged form is more apt to be left by the wind. Of course the disease will generally show its ravages on the less vigorous vines first. Still I can see no hard-and-fast rule for the attack and spread of phylloxera, except that it is as sure extermination to European vinifera as is grim death to the human being.

But here ends my pessimism; the pleasing side is to come. Naturally the large rewards offered in Europe tempted many to seek a remedy for this great vine pest, but none proved successful in any great measure until the planting of American resistant stocks was tried. By this means I now believe we have not only met and defeated the enemy, but the industry stands on a surer and better basis than before the introduction of phylloxera. The first planting of resistants in California on a large scale was by Dresel & Co. of Sonoma in 1878. The varieties were principally Riparia and hybrids, Clinton, Taylor, Lenoir, and many others. The Lenoir did not do well, on account of soil conditions. Riparia proved the most successful in this locality, and after twenty-six years we find these vines producing excellent crops. As to quality, have I not already stated that Mr. Dresel received a grand prize at St. Louis this year?

As to resistants in general, I can do no better than quote Mr. Dresel's own words. He says: "We made all the mistakes possible, the main one being to graft from four to six inches below the soil. In general, I can see no difference in the behavior of grafted resistants and non-grafted vines in regard to bearing crops, except that some of the vinifera bear larger crops upon resistant roots than upon their own. I have not remarked that the crop is falling off in any way, except the usual phenomenon of a light crop after an exceptionally heavy one or a succession of two heavy crops, and the falling in such instances seems to me the same as it was upon our vinifera vineyards." He also says that he believes they will remain stationary in respect to crop for an indefinite period. Of course abused vines will retard, bear less, and will eventually have to be replaced. I see no reason why our vines will not last much longer than the natural bearing age of those in Europe, placed at thirty-five years.

Mr. Dickson has had a resistant vineyard for eighteen years, consisting of Riparia and Rupestris grafted to Zinfandel. They bear from three to five tons a year, and he says he considers the grapes of a superior quality. As to young vines, I will cite two instances: C. T. Driscoll has a young vineyard of twenty acres of Lenoir stock grafted at three years to Alicante Bouschet and Zinfandel. The third crop, 1904, or seven years from planting, a bad year, having suffered from excessive heat and early rains, they produced three and one half tons to the acre. J. M. Talbot, who has a seventeen-acre Lenoir-Bouschet vineyard, grafted at three and four years, received this year, 1904, four tons to the acre. Now these reports compare favorably with the 1893 report of I. de Turk, Commissioner for Sonoma District, as follows:

"Driscoll, T. Total, 18 acres; in wine grapes; in bearing, 16 acres; soil, loam, part red, light and black; upland; east exposure; crop, 40 tons."

"Talbot, Jos. Total, 20 acres; all in bearing; soil, volcanic loam; upland; exposure, south; crop, 100 tons."

This was before the phylloxera had depleted these vineyards. Mr. Dresel's vineyard (resistant), at Sonoma, according to this report, was then yielding four tons to the acre.

An attack has been made by many, in fact I encounter it every day, and every time I find it to be false. It is: "The so-called resistant stocks are not really resistant, but they also succumb to attacks of phylloxera. I hear Mr. So-and-So's resistant vineyard is dying." I have never found phylloxera the cause.

Mr. Dresel planted Taylors, a vine supposed to be but partly resistant, and in the holes with each rootlet he placed whole handfuls of phylloxera. Not one of those vines ever died from this cause and are producing good crops to-day.

Mr. Pleasant Wells, nine years this spring, planted Lenoir, another supposedly only partly resistant vine, in the same holes from which the same year he pulled vines badly infested with phylloxera, and every vine is perfectly healthy and vigorous to-day.

The Talbot Lenoir vineyard was planted on the same land where phylloxera vines were pulled out, and on either side may be seen the old dead stumps, yet I challenge any one to find a single diseased vine on the eighteen acres.

Some resistant vines have died, many others look badly. The cause I have already stated. Mr. Dresel says that their main mistake was in grafting four to six inches under the surface, "and in consequence, many of our vines are suffering from phylloxera attacks to-day." In no other condition do I find phylloxera attacking resistant vines.

Now, if I may say a word in praise of one resistant vine, I should like to bear testimony to the most excellent results we have had in Sonoma County with the Lenoir. Not only as to its growing qualities, easy to graft, either bench or field, but our people have confidence in our worthy expert, Newton B. Pierce of Santa Ana, and he tells us that the Lenoir is the vine most thoroughly resistant to the California vine disease. Many prefer the Rupestris St. George, and in many localities it shows a superiority. Of course, we must suit our vines to our soil and climatic conditions.

In summing up our prospects, I feel confident in saying that, if some do believe the star is setting on our vine industry, I believe that the sun is just rising, and instead of Europe accusing us of relabeling their wines, we will have to watch them closely to see that they do not transpose such labels as Italian-Swiss to, I might as well say, any kind, as President Rossi informs me they drew the grand prize at St. Louis in 1904. And now look sharp for the Santa Clara champagne, for it will surely be coming back to us with a foreign label; but happily no external manifestation can change the uniform and excellent qualities of our California wines.

THE WORK OF THE COUNTY HORTICULTURAL COMMISSIONER.

BY A. D. BISHOP, OF ORANGE.

Most papers deal either with fact or theory, but this must be individual opinion, and as there are as many opinions as there are people, no one will be compelled to agree with me.

The idea that the Commissioner was to deal only with the insect enemies of our industries is deeded to the past, and with the present have come diseases of an entirely different character, although working as insidiously and as destructively, and to guard against their introduction and spread into fields where they have not already gained a foothold is a problem of as great importance as any that has ever been encountered and solved.

And to be able to trace their character and to attempt their control must require a careful scientific training. Consequently, a thorough training in entomology need not necessarily be a prerequisite to a good Horticultural Commissioner. His work should be devoted to the acquirement of a knowledge of pests and diseases, their sources and danger, together with the most approved methods of control and prevention, putting it in the simplest form, and keeping it always before the people of his district, rather than devoting his time to the inspection of orchards for insect pests known to be in all, because he can increase his salary by so doing. As quarantine guardian, he should be most careful to guard against the introduction of pests and diseases not already established, and should spare no pains to eradicate should they appear, while assisting as much as possible in the laudable object of adding new and useful plants and trees to our already extensive list. While it is true that most of our troubles were brought to us by this means, it is not at all certain that additions can not be made without the introduction of new ones.

To be absolutely successful, he must have the confidence and assistance of every resident of his district, and be possessed of such abilities as to command the respect of the power which appoints him.

THE QUARANTINE DIVISION OF THE STATE COMMISSION OF HORTICULTURE.

BY E. K. CARNES, OF SAN FRANCISCO.

The Quarantine Division of the State Commission of Horticulture virtually stands as a guard over the horticultural interests of the State, by preventing the introduction of destructive insect pests.

Geographically situated, San Francisco is the natural doorway of commerce, where ships and vessels representing nearly every country of the globe pass through the Golden Gate into San Francisco Bay, and up to their various piers, to discharge and receive cargoes. This city being the distributing point from whence these cargoes are sent to every section of our State, the greatest danger from the introduction of foreign pests is to be found at this port of entry; consequently, the Quarantine Division is stationed at San Francisco, with offices in the Union Ferry Building, which is admirably located for the work, being situated in the heart of the shipping district.

The acquisition of new territory by our Government, better facilities for ocean travel, large freighters with lower shipping rates, and the recent unpleasantness in the far East, have acted as powerful stimulants on foreign commerce in general, and very prominent among the various commodities which show a wonderful increase appears fruit and nursery stock.

As much of this stock is from countries where destructive insects have made such inroads on fruit culture that it has been found almost impossible to continue the business, the strictest quarantine is maintained to prevent their possible introduction into this State. Under our present strict quarantine system, and with the kindly assistance of the United States customs officials, these arrangements have made it possible to present now a formidable barrier to the introduction of new species, and the effectiveness of this system can be vouched for by the fact that for the past ten years no new pests have been introduced.

The principal duties connected with this division are, the inspection of all foreign ships and sailing vessels that arrive at this port, the inspection of stock arriving by rail from outside the State, the propagation and distribution of beneficial insects, and correspondence relating not only to keeping out new species of destructive insects, but ways and means of keeping down those we unfortunately have within the boundaries of our State.

We are all familiar with our horticultural quarantine regulations, and we know that our ports of entry are guarded from the invasion of foreign insects, but I believe little is known of the actual details of this work, and it is my firm belief that every orchardist should know just how and what we have to deal with, and when made acquainted with the facts and dangers, the importance of additional quarantine protection will be manifest to all. Therefore, a short description of the manner in which vessels are handled at this port, together with some of the trials and pleasures of standing guard at the natural gateway, will be interesting to all.

The present system, under which we operate, was inaugurated by Alexander Craw during his many years of service as Quarantine Officer at this port, and which has so perfectly protected us in the past from the introduction of any new species; but, with the enormous increase in ocean traffic, that system will have to be materially strengthened according to the increase of work, if we wish its efficiency to be sustained.

On almost every vessel that touches at this port comes some shrub, plant, or fruit, and with it some form of destructive pest, but none are permitted to land any farther than is necessary to make an inspection.

At our office we are kept constantly informed regarding the movement and arrival of vessels by the two exchanges, of which we are members, and from them receive notice as soon as a vessel is sighted, which, on a clear day, is from twenty to thirty miles out. In this manner we are able to figure ahead a little, and be ready for them when they are passing up to the dock, and we immediately start for that particular pier. As the laws of our State empower us to go almost anywhere in the shipping district, we are allowed to pass into the customs corral, and take our station at the side of the gang plank and carefully scrutinize every package that comes down.

When we spy a plant, tree, or package of fruit, it is immediately taken into our possession, and guarded until all the passengers have landed; then comes the work of inspecting them, and sorting out what may be allowed to land, what must be fumigated, and what must be burned. While this is being done, the customs officials are going through the baggage, as every package, however small, must be opened and inspected, and through the kindness of these affable gentlemen, absolutely nothing, not even a single piece of fruit, is passed until it has been submitted to us for inspection. In this manner, we have a most rigid system of inspection, and when all the baggage has been worked over, we search the vessel, call on the officers and crew, and make inquiry as to whether anything in their possession is in our line. As they know full well that they can not get it ashore, they will, in most cases, promptly bring out all they have. We compel them to take it ashore, as nothing is passed on the ship, and as this fact is well known to all the customs officials, they can not be talked into believing that it has already been inspected.

At several of the piers where most vessels dock, we have fumigating-rooms, or in adjacent piers, so they will be handy, also air-tight sheets made of heavy canvas and oiled, various sized fumigating boxes, and a good supply of chemicals handy. When the amount to be fumigated is small, we bring an outfit to the gang plank and do the work there, but when lager amounts are to be treated, we use the rooms. When we are satisfied that all the insects are dead, we paste a red label on the packages thus treated, which is signed and dated, and with this passport on it the customs officer at the gate allows it to pass. As the customs officers are always present at the planks of the steamers while in port, both day and night, they hold everything for us that has not been brought to light at the regular inspection, the owner of the fruit or plant is given our 'phone number, and we make another trip to that vessel, and pass or reject that which is left. Several later visits are paid to the ships while in port to see if anything is being held for us.

The duties of Horticultural Inspector at this port are not all filled with sunshine, for we have no office hours, but must be on hand from sunrise to sunset, as vessels can dock during these hours, and if they arrive inside by sunset, they are entitled to dock, which means as late as 9 P. M., and later, before all the baggage has been searched, and perhaps next morning an early boat will arrive at 6 A. M. It is the general opinion among the inspectors and dock officials at this port, that sea-captains have a preference for docking on Sundays and legal holidays, and our time, therefore, includes these days.

In many cases the gang plank of a vessel may be likened unto the "Bridge of Sighs," for it is certainly pathetic to listen to the deep, sad sighs that come from the heart of some thoughtless passenger who has treasured, nursed, and cared for some rare plant, shrub, or tropical fruit, purchased in some distant land, and is bringing it home as a souvenir from that trip across the pond, only to find that it harbors some species of noxious insect, and to hear that final sentence pronounced by the inspector at the plank, "This plant must be consigned to the fiery depths of the donkey engine, for this pest is not allowed to land," and with a farewell look at the cherished curio, he sees the inspector start toward the furnace, and soon all that is left is the smoke, as it slowly curls up the ship's funnel. Even an explanation of the danger of allowing it to land fails dismally toward appeasing the wrath of the individual in a case like this, and remarks of a rather pointed nature are directed at the head of that unfortunate inspector, and the cultivation of new friends is rather an impossibility with the traveling public who bring anything in the line of horticulture.

From Mexico our greatest danger is the introduction of the orange fruit-fly, and not even a single orange is allowed to land. Now, as an illustration, place yourself in the position of inspector for a few moments at one of the vessels from Mexico. Down the plank comes a Mexican lady, with her husband, and in the mother's arms you see a bright-eyed baby, closely hugging to its breast a large, ripe Mexican orange. That orange must not land, for it undoubtedly contains the eggs of the dreaded fruit-fly; your duty compels you to destroy the orange, for contained in it might be the start of the entire destruction of our orange industry. The parents of the child can not speak a word of English, and know less of horticultural laws. Now, do your duty. Not very pleasant. Certainly, every one on the dock blames you for making the child cry; the father talks Spanish to you so fast that it is a good thing that you only possess a limited knowledge of the language; and just how it was taken must be settled by you, on the supposition that you are the inspector.

Many attempts are made to bring in the Mexican sweet orange, both by passengers and crew. This fruit has often been taken from the bottom of a trunk, folded up among the clothing, and I recall one instance where a passenger had several fine specimens tucked inside socks, down in the corner of his trunk. But all are immediately confiscated and burned, even when found among the ship's stores and not intended to be landed.

Another "pleasant" duty is to remove and destroy the floral decorations from the casket of some departed citizen who has died abroad and who is being brought home for interment. Cases of this kind require gentleness, yet absolute firmness, and a strict adherence to your duty, and a knowledge of the danger in yielding, for by the enforcement of just such rigid quarantine has the State of California been spared the expense and loss that would occur through the introduction of most any one of the hundreds of insect pests which we know exist to-day in other countries and which have made fruit-growing almost an impossibility in those countries.

The pests which we now have, that have caused us so much trouble and expense, were not introduced first in large numbers, but, perhaps, by a single fertile female on some hand plant, and from this insignificant start they have spread the entire length and breadth of our State, and, as in everything else, it is the small things that we must watch as well as the larger ones. In the case of nursery stock and tropical fruits landing at San Francisco, all are inspected carefully, and fumigated on general principles, so that nothing can escape. The commission merchants and importers have fumigating rooms in connection with their establishments, and we personally treat all infested fruit landing, with the exception of that destroyed. In our work the greatest aid is afforded us by the United States customs officials, and without their aid our work would be greatly hampered, and would require a much larger force, as it is in the case of vessels from Honolulu and the Hawaiian Islands, where they have some very serious pests. One especially I might mention as the cucumber fly (*Dacius cucurbitæ*). This fly attacks all kinds of melons, tomatoes, and cucumbers, and were it introduced into this State would cause us tenfold the damage done by the San José scale, and would be a hundred times as hard to fight. This is a close relative to the Mexican orange-fly, and works in somewhat the same manner, by depositing its eggs in the mature and half-grown fruits, and these in turn hatch into maggots, completely ruining the fruit by converting the inside into a mass of mingled slime and maggots. This is one of the most disgusting pests of which we stand in immediate danger, and absolutely nothing in this line is permitted to land. Many other serious pests exist in our new possessions, and as there is no customs service on the vessels plying directly between here and the Islands, we have to attend to all these vessels alone, which takes a great deal of time, and with our many other duties, it can not be watched as closely as it should be, especially if the trade with these Islands increases as rapidly in the future as it has in the last year or so. When it is taken into consideration that we have some three or four vessels, usually docking at different piers, and often several at the same time, and with but two men to attend to them all, it can readily be seen that we have reached about the limit under the present system, and unless it is strengthened, some new pest is bound to evade us, as it is impossible to be in more than one place at a time. With so many deadly pests year by year gradually crawling nearer to our State, and better facilities being added to aid them to be introduced, it certainly behooves us to throw around our State every safeguard possible against their introduction.

Many cases of plants arrive with good credentials, certifying that they have been carefully inspected and fumigated, but we recognize no certificate, and only pass them after a personal examination and treatment.

In case the destination of the package is some point in the interior, we give it a cursory inspection to satisfy ourselves there is nothing in it not permitted to pass, give it a light fumigation to kill anything that may be crawling, and then notify the County Commissioner that it is coming, turning it over to him for a piece-by-piece inspection, thus giving us a double check on it. We have the same regulations at the port of San Diego, and this closes that port against those dangerous pests.

From the above description of the methods employed, I feel confident that you will agree that it has been almost impossible for any new pests to gain admission to our glorious State, and the fact that no new ones have gained admission, considering the fact that some of the worst known pests are to be found in our nearest neighboring countries, speaks well for California's system of horticultural quarantine; but may I be pardoned for stronger emphasis on the fact that our commerce is steadily growing and the system we have inaugurated is well enough for the past, but will not do long for the future? To a person not acquainted with the extremely dangerous pests that arrive at our ports daily, and coming thicker and thicker every year, this danger can not be comprehended to its fullest extent, yet a visit to our office, where you can see the rows and rows of specimens of pests that have been captured and destroyed, will, in a measure, impress on your minds the importance of this matter. I wish you all could spend a day with me, and with your own eyes see the various insect pests that arrive from other countries on shipments of plants consigned to various nurseries, and small plants and palms that are addressed to cities and towns in the very heart of your most prosperous fruit-growing section. Should any one of these escape, you all know too well, from past experience, what the consequence would be. Could you all see this day after day, personally, then you might realize the need of stronger quarantine protection.

Next in importance to the quarantine work of this division is the propagation and distribution of beneficial insects, and for this work we have a small room with glass partitions, fitted up with breeding cases, jars, and the necessary appliances to carry on this work in a small way. In this room we have growing plants, each the host of some particular pest for which we have a parasite. A stock of these parasites is kept constantly on hand, but our limited space will not permit us to breed them in sufficient quantities to send out large colonies, so we simply aim to distribute a small colony in each district where the pest is to be found, and from this start the neighboring sections must seek their supply, which makes the result from these little friends seem somewhat slow. The wonderful results accomplished by California along the line of insect control, by use of their natural enemies, certainly justifies the establishment of a larger insectary, where the food plants could be propagated, and all of our beneficial insects raised and distributed on a large scale. The greatest difficulty is encountered when we try to obtain the proper food plants, and in the small room we now have, it is impossible to supply each applicant with but a very small colony in order to have enough to go around. Could California have a large propagating plant, and raise her beneficial insects on a large scale, thereby enabling us to send out a good supply instead of a very small colony, I venture the assertion that the direct results to the grower in one season would repay the necessary expenditure many times over. This parasite method is no longer an experiment in California, but is now firmly established, and with the eyes of the world on this State as an example from which to copy, we should place our beneficial insects on a basis where they can demonstrate to the entire world that California's method of "Bug vs. Bug" will repay a hundredfold every dollar expended in their behalf.

With our collector, Mr. George Compere, in the field, and his recent discovery and introduction of the parasite for the codling-moth, and the predaceous enemy of the dreaded red scale (*Chrysomphalus aurantii*) and the other species of general *Aspidiotus*-feeding ladybirds, we have much to hope for, coupled with the fact that the policy of our Commission is to push this matter forward until we have an efficient enemy for every pest that we now have within our boundaries. Judging from the number of applications for the parasite of the codling-moth already received at this early date, the demand for this insect is going to be enormous and will require the closest attention and very careful manipulation in the work of propagation, as the life history of this parasite differs greatly from our common species of parasites, and in order to supply this great demand we will require the hearty coöperation of every grower of apples and pears in the State.

To prevent the introduction of any new pests, to reduce below the danger limit those we now have, and to help California to produce the finest, cleanest, and best fruit of any State or country on the face of the globe, is the present and future duty of the Quarantine Division.

THE CHAIRMAN. The essays that you have heard read are now open for discussion.

DISCUSSION ON PEAR BLIGHT.

MR. BOOTH. Mr. Chairman, I would like to ask Professor Smith if he can give us a personal opinion as to the effective control of the pear blight. Have you formed a personal opinion as to whether the pear blight will be controlled with ordinary efficiency in this State ?

PROF. SMITH. The question of whether a method will be found is simply a matter of opinion, and I have not any opinion now that would be worth anything, because it is to-day simply a matter of experiment and investigation. We believe that there is a remedy for every disease, and the only way is to try to find it, and it is worth an effort to try to find it. As to its being possible to control it, we can only judge by the experience in other parts of the State. In the southern part of the State they have cut it out, and they have held it back with various degrees of success, but finally it has not been controlled.

MR. BOOTH. I find with us, on the Cosumnes River in Sacramento County, there are a few cases where it is to be seen, and other places right by the side of them it is not to be found; while sixteen or eighteen miles from us, on the Sacramento River, they have it pretty bad. The question with us has been whether we could control it in our valley.

PROF. SMITH. The best thing we know of is to cut it out very thoroughly at this time of the year, when the blighted leaves stick on the tree and the green leaves have fallen off.

A GROWER. In our county the second year there was more damage done to the trees that were well cared for and had previously been sprayed every year. There was more damage done from the effects of this blight right on the body of the tree, from four to twelve inches from the ground, than any other place. The top would be green and raise a crop of pears—not good pears, but a crop of pears—but the tree was dead clear around the trunk three months before the foliage changed, as disclosed by cutting it with a knife.

PROF. SMITH. There are effects something like that in the northern portion of the State. Orchards where blight had appeared and been cut out very thoroughly, would afterwards show it on the bodies or large limbs of the trees, where it was impossible to see any connection with the blossom or with insects. That is a peculiarity that does not exist in the East. There is something about the spread of the disease in that respect here that is apparently not like that that is laid down in the books. The general theory of the blight treatment is that the blight develops more rapidly in the more succulent and vigorous growth, and the more the tree can be retarded the harder the wood is kept, and the slower the blight develops. I think in Sacramento County the best thing would be to determine how successful a very thorough pruning would be. It is hard to tell how thoroughly the work is being done, because of the somewhat unreliable nature of the labor employed there in most of the orchards.

A MEMBER. I wish to ask if the blight affects all varieties of pears, or is it partial to the Bartlett?

PROF. SMITH. It is partial to the Bartlett, but it affects all kinds.

LEGISLATURE ASKED TO FURNISH ASSISTANCE IN QUARANTINE DIVISION.

DR. DINSMORE. It is getting very late; we have heard this paper on quarantining in San Francisco, and I presume that every man who has any interest at all in any department of the fruit industry appreciates the great importance of the utmost vigilance and efficiency of that quarantine. And we are also told that the force now allowed is altogether inadequate, and we can well understand how it must be, with only two men. I am making this motion without consultation, but I think that it will meet with approval, and I therefore move that this Convention request the Legislature to make an appropriation sufficient, at least, for the employment of another man in the quarantine office in San Francisco.

JUDGE LIEB. Mr. Chairman, I take great pleasure in seconding that. I wish it had gone a great deal farther. At a little dinner we gave to Alexander Craw just before he left this State, some gentleman from Sacramento whose name I have now forgotten gave the statistics of the fruit industry of this State; and I must confess I was myself astonished at the figures, showing that there are millions and millions at stake in the fruit industry. Here we are constantly standing on one volcano after another from the introduction of pests which destroy so much property. We are getting all sorts of things here, as everything that is bad is not native here, but comes from somewhere outside. I think there ought to be no limit to the money -as long as it is spent well—to be appropriated by the Legislature to keep out every kind of insect, and there should also be most generous appropriations for the purpose of developing beneficial parasites in addition to those we have. I am almost sorry that the motion did not go further, and to the extent of saying whatever may be necessary to be devoted by the Legislature to aid this good cause.

DR. DINSMORE. I sympathize with what Judge Lieb has said. I said one, because I did not dare to make it more. If Judge Lieb will second it then we will ask for two.

MR. DAY. Mr. Chairman, one question I wish to ask Mr. Ehrhorn. What provision was made in regard to San Diego, as to the inspection of plants there?

MR. EHRHORN. I will say that Hon. Ellwood Cooper has appointed a man who attends to the port of San Diego, and all vessels that come into that port are inspected just the same as those which come to San Francisco are inspected.

DR. DINSMORE. I will then put this motion: That this Convention very urgently requests the Legislature to make a sufficient appropriation to permit of the employment of two additional inspectors at the port of San Francisco.

THE CHAIRMAN. You have heard the motion. All those in favor please show their assent by saying "Aye."

Motion carried unanimously.

INTRODUCTION OF PARASITES AND PREDACEOUS INSECTS.

MR. DAY. I move that this Convention ask the Legislature for an appropriation of $20,000 to be used for the finding and introduction of parasites and predaceous insects.

JUDGE LIEB. Mr. Chairman, I remember some ten years ago Professor Koebele told me that, in the southern part of Europe, there was a parasite of the codling-moth that absolutely held it in check; and that, if the authorities of this State would, after he had established it here at his own expense, pay him $5,000, he would take his chances of doing it. Shortly after that some little bit of a country down here richer than we are got him away from us, as they do most of our men—got Mr. Craw the other day. Now, if we had done something of that sort at that time, I think it would have been worth nearly $5,000, in the way of apples and pears, in the last ten years—I have a shrewd suspicion it might have been worth a part of that. I take great pleasure in seconding the motion.

THE CHAIRMAN. You have heard the motion, that there be made a demand upon the Legislature for an appropriation of $20,000 for the special purpose of the search for parasitic insects to be imported to California and distributed among the fruit-growers. All those in favor please show their assent by saying "Aye"; contrary opinion, "No."

Motion carried unanimously.

The Convention then adjourned until Friday, December 9th, at 9:30 A. M.

PROCEEDINGS OF FOURTH DAY.

FRIDAY, December 9, 1904.

The Convention met at 9:30 A. M. President Cooper in the chair.

DR. DINSMORE. This is as good a time as any to introduce a motion which I wish to make. Last evening we were talking about asking the Legislature to make an additional appropriation for the object of increasing the quarantine force in San Francisco bay. Everybody, I think, appreciates the importance of that action. I therefore move that a committee of five be appointed, from different parts of the State, and I would suggest the name of Judge S. F. Leib, of this city, to be entrusted with the matter, and that the committee should be authorized and requested to make an effort to secure legislation on that point.

(Motion duly seconded and passed.)

PRESIDENT COOPER. I will name that committee during the morning hour.

THE GROWING OF GRAPES, FROM THE PRODUCER'S STANDPOINT.

BY W. J. HOTCHKISS, OF SAN FRANCISCO.

Because I see on the program of this Convention that the subject of wine is to be treated by one much more competent than the speaker, I have eliminated that from this article. In treating of this subject, I wish to divest it of all theories and obligations that might be thought to be entailed upon the grower in regard to the production of grapes that would build up a trade and a reputation for California wines, leaving these factors as the subject for the fostering and attention of the wine-dealer. I shall treat the growing of grapes as a business pursued by the grower for immediate profit, and viewed from the standpoint of present and past experiences.

The principal factors to be considered in the growing of grapes are, the section of the country, the varieties, and the soils.

Section.—First, grapes must be chosen that are adapted to the climatic conditions of the section in which they are planted. Heavy foliage to protect from sun-burn in hot sections, and thick skin, loosebunched, where early rains are likely to fall during the vintage time. The climatic conditions governing the fermentation at the time of wine-making are important factors to be considered in sectional selection. Grapes intended for dry wines can be produced as well in most of the hotter valleys, but should not be planted or grown there, as conditions are not favorable to successful fermentation of dry wines in those sections. The converse is true of grapes adapted for sweet wines.

Varieties.—Elements to be considered in the selection of varieties are quantity and quality of the production, and the ability to withstand vine diseases, and the requirements of wine-makers in the principal sections in which the grapes are grown. If a district is already producing grapes running to large gallonage and light in color and alcohol, grapes should be planted of dark color and high alcohol. These will bring a premium at the wineries as a blend for the light alcohol and heavy gallonage producers. The quantity of tonnage per acre up to this time has been the most important factor for the grower, and the differential between the price of light-bearing grapes producing the finest quality of wines, and the heavy quality producing the cargo wines, has never been large enough in favor of the former to justify the grower in producing better varieties instead of the heavy bearer. Whether this is bad for the wine industry and shows poor judgment on behalf of the wine-maker in so regulating the prices, are matters not to be considered in connection with this article, but from the grower's standpoint of production or producing for a profit under present and past conditions.

Some varieties will stand a multitude of the diseases which attack vines much better than others, and a careful investigation of the comparative growth and healthfulness of different varieties in the immediate section about to be planted is of vital importance to the intending vineyardist.

Soils.—Vines should be planted only on good land. Some soils are better adapted to the production of color, and others for white wines; but poor soil will give a poor return of whatever variety is planted. It is true that vines will grow and produce on poorer land than most any kind of fruit, but the grower farming this poor land will ultimately go broke in competition with the man whose vineyard is planted on good soil. Do not plant on soil where the vines die out from phylloxera or other diseases, until the land has been farmed to other crops or laid fallow until it partakes again of the character of new soil. More money has been wasted in attempting to replant and keep up vineyards as they die out than in any other way in viticulture.

In regard to the name, productiveness, and character of the different varieties best to plant, kind of soil to plant in, etc., these are matters governed entirely by local conditions, and the grower should be influenced by conditions as he finds them in the location where he expects to grow his vineyard. This is true also in regard to the selection and method of grafting of resistant stocks. Good-sized books have been and are being written on these details; which are far beyond the purposes or possibilities of any general paper, like the present one, to handle.

NATIVE WINES, AND THEIR FUTURE.

By PERCY T. MORGAN, of San Francisco,
President of the California Wine Association.

The future of the California wine industry is largely bound up in the earnest coöperation of the various elements—growers, wine-makers, and wine-dealers—in promoting a more general use of wine.

Each element now stands aloof on its own ground, and does not appear to have any interest beyond the immediate disposal of the product from hand to hand.

There is no "promotion committee" in the wine industry for the extension of its business. The grape-grower when he has sold his grapes lets it rest there. The wine-maker when he has made disposition of his wines to the large dealers thinks his mission has then ceased; and the large dealer, in his turn, when he has turned his wines over to the merchant and jobber, says "amen."

It seems to be forgotten that the wholesale liquor dealer deals in other products than wine. Most of them carry wines practically as a side line. Their particular interest is in the whiskies and other spirituous liquors which they distribute more largely than wine.

In this country, where wine-drinking is only incidental, instead of general like in the large wine-producing countries of Europe, wine shops where only light wines containing naturally fermented alcohol are offered, appear to be a commercial impossibility, because there are not sufficient patrons who are exclusive users of wine to make such an enterprise profitable.

The native wine business, therefore, is inextricably mixed up with the larger whisky interests which the wholesale liquor dealer is compelled to combine in order to render his capital and labor remunerative.

The gallonage consumption of whisky in this country per capita is three times as much as the wine consumption. This appears extraordinary when it is considered that wine is a beverage, while whisky is used largely as a stimulant. When a man takes a convivial drink it is usually whisky or beer.

The vital question to-day in the wine business is how shall we popularize the consumption of healthful native wines as beer and whisky have been popularized?

The answer which first comes to the mind is to advertise the benefits to be derived from wine as compared with whisky, beer, or other beverage.

Among the largest advertisers in the country are the beer interests. They have made it pay, else they could not continue the enormous expenditure for bringing the attention of the public to their product. The whisky men, also, are large advertisers. We can hardly turn in a street car or to a board fence, or take up the daily newspapers, without seeing the advertisement of this and that brand of whisky. The advertisements are got up tastily to catch the eye. The public sees this or that brand of whisky or beer constantly advertised, and comes to believe largely from such advertising in the excellence of the advertised article.

Patent medicines containing alcohol are also very largely consumed. They would not be consumed—they could not reach the public—unless they were properly advertised.

The question which arises, therefore, is, if the consumption of beer has reached eighteen gallons per annum per capita, and of whisky one and one half gallons per annum per capita, while wine in the United States is credited with only one half gallon per annum per capita, whether the low consumption of wine is not somewhat due to the fact that the public attention is not properly called to its merits?

Then, again, the question arises, if publicity will help the consumption of native wines, who shall pay for this publicity?

The mere advertising of California wines as California wines, without attaching any particular brand to them—and this, after all, is the only method whereby the public can, through articles in the newspapers, be educated up to the drinking of wine—would not benefit any particular house or firm except as it benefited the industry in general, so no particular concern or firm could afford to undertake an advertising campaign for the benefit of California wines in general. It must be done, if done at all, by the industry at large, each contributing his share to the general fund. Then if some firms prefer to advertise their individual brands as being better, and more carefully aged and matured than the general run of California wines, their advertising would reach an already educated public mind and bear such fruit as no individual effort could otherwise command.

The success of the advertisement of individual brands would by reflex action also benefit the general industry, because the higher the price obtained for the individual brand, the greater stimulus and impetus would be given to the growing of the better varieties of grapes, and the general uplifting of the tone of the industry.

The general comment of men of high position who come from the East and taste our fine wines on their native heath, is: "Why, I never believed that such wines as these could be grown in California. Where can we get such wines in the East? If we could get them as uniformly good as these, we would drink nothing else but California wines, because they suit us better than most of the imported wines which we have been accustomed to drink. To us, hitherto, the name of California associated with wines has been synonymous with cheapness. We only hear that California wines are pure and cheap, to be drunk only by foreigners in place of the ordinary wines to the use of which they have become accustomed in their own country; but we seldom see a California wine on the wine list of the large Eastern hotels and restaurants, and if we do and try them they are frequently of a quality which would not induce us to repeat the experiment."

In other words, it appears to be a surprise rather than a regularly acknowledged fact, that California *can* produce and *does* produce as good wines as anywhere in the world, and the knowledge of this fact seems to be confined to the few, instead of to the multitude.

Eastern men are finding that it pays to advertise; that it pays to bring to the attention of the individual the excellence of their product; and in investigating material for the preparation of an address which I lately made before the International Pure Food Congress at St. Louis, I was surprised to find that almost one third of the sparkling wine, or so-called champagne, consumed in this country was of native origin. More than a dozen brands of Eastern champagne are being regularly advertised and largely consumed. The quality of the product is being improved every year. The cellars and methods of handling are being constantly enlarged upon.

Some brands of Eastern still wines are also being advertised, and one I have particularly in mind appears to have a very extended popularity.

There is no reason why California wines should not also have a vogue in the houses of the wealthy, for there are inherent qualities in a properly made and matured California wine which make it as good as any wine on the face of the globe.

There is, of course, in California a large amount of ordinary wine made, and it is necessary that this should be the case, for the man who drinks wine habitually at his meals is usually a foreigner who has acquired the habit from his childhood days, and in order to continue in the use of his beverage he must obtain it at a reasonable figure.

This is the man who has been the backbone of the California wine industry. He thoroughly appreciates that nowhere in the world can he get as pure and sound and generally excellent an article as the Califorfornia wine, which is made readily available to him at a reasonable figure all over the United States; but this man, as I have said before, must get his beverage reasonably. It must be so available and cheap to him, as to permit him to make it an article as usual and necessary on his table as is bread or salt. To raise the price to this consumer would be the height of folly, for it would alienate the greatest friend of the California wine industry, and induce him to turn to other channels for his daily beverage. Consequently we must look to the *general* public for our educational field; to the public which is willing to pay a fair price for a good quality.

The born wine-drinker does not need to be educated; he is already a convert. He does not need to be advertised to, because he himself will seek the beverage he has always been accustomed to, and if it is good and reasonable in price will continue its use. It is to those who do *not* habitually use wine, but who, by reason of these articles continually being called to their attention, constantly keep whisky or beer in their houses for social occasions, that a campaign of education through the daily newspapers and magazines would go a great way to accustom such people to call instead for California wines.

It does not seem impossible that an annual trade of one million cases of high-grade California wines could be attained in the United States, when you come to consider that this would be less than one seventh of a bottle per annum per capita of the population; but the sale of such a quantity of fine-grade wines would immensely stimulate the general value of California vineyards, for instead of the merchant considering a profit of two, or three, or five cents per gallon as a satisfactory goal to be reached, he would look, by the lessening of the unit from a gallon to a bottle, to five or six times this profit per gallon.

He would then be glad to pay more for his initial grapes or wines, because with public appreciation assured he would know practically to a cent what he was going to get for the aged and matured wines in his cellars.

To-day no such assurance exists. He may, believing that the outlook justifies it, pay in one vintage a large price for grapes and wine only to find that succeeding heavy crops have so depreciated the value of the stock of wines in his cellars as to bring him face to face practically with bankruptcy. He is not willing under such conditions to take these chances. It is not a commercial proposition. It therefore resolves itself into a question, not how *much* can he pay for wines for holding and maturing, but how *little* can he get them for, so as to minimize his chances of loss?

We are a long way, however, from shipping any such quantity of cased wines. Statistics of railroad and steamer shipments show that such wines sent from California rarely reach in any year fifty thousand cases, while bulk shipments reach nearly eighteen million gallons.

This means practically, therefore, that the reputation of California wines is left solely in the hands of the Eastern wholesale handler in bulk, who may or may not bottle it with the care and attention which all fine-wines need, or who may or may not give the wines the time in bottle which is absolutely requisite to the development of the finer qualities, the smoothness and the bouquet which characterize the better brands of wine from abroad.

In a word, nearly all this is left to the commercialism of handlers who do not depend solely upon California wines for their business success, but who most frequently handle also foreign and Eastern wines and are primarily whisky-handlers.

Should not the reputation of the finer California vintage wines be more jealously guarded by Californians? The renowned "Chateau" wines of France, and the "Schloss" wines of Germany, would never have attained the value and reputation which they hold in the public estimation, if they had been sent out in bulk and been bottled by strangers.

California is yet young, but to gain a national reputation for her wines she must emerge from swaddling clothes and take on the garb of a man; she must follow in the footsteps of older countries and adopt their methods.

There are magnificent wines to-day in the cellars of California which have been carefully selected and properly aged and matured, but the great consuming public in the East will not, unsolicited, reach out its arm three thousand miles to obtain them.

"If the mountain will not come to Mahomet, Mahomet must go to the mountain." And so must we carry our wares, in the most attractive form, to the consumer, in order to have them properly appreciated.

The direct marketing of these finer wines should not, and will not, interfere with the present business of those who now distribute California wines; on the contrary, the sale of all California wines, of whatever grade, can not fail to be benefited by a public appreciation of fine wines properly aged and matured in bottle in California cellars. For such wines the public will, when properly educated regarding their excellence, be perfectly willing to pay an adequate price.

To effect all this, however, concerted action is necessary. It is estimated that over eighty million dollars is at stake in the grape-growing and wine industry of the State. Can not this eighty million dollars contribute according to the benefit derived by each element in the business? It must do so, if it is desired to avoid the violent fluctuations in vine and grape values which now are common.

If vineyardists want grapes to rule high in price, they must coöperate with the distributers to obtain a stable price for the aged and matured article; otherwise a hand-to-mouth policy must continue to permeate the industry. No longer can each afford to stand in his own corner and refuse "to play in the other's backyard." It is only by coöperation of all the elements that any considerable and permanent success can be attained.

This year a disastrous slump in the price of all kinds of wines was only averted by an accident of the elements. At the commencement of the vintage everything pointed to another record-breaking crop of grapes, following two years of abnormally heavy yields. Eastern handlers of California wines had been advised that a drop in prices was imminent, and therefore were pursuing merely a hand-to-mouth policy in buying. Weak holders of wines, becoming scared, commenced to dump their wines upon the open market at ruinous quotations, and had it not been for the firm stand taken by the large wine-handling interests, nothing could have averted a panic such as has temporarily overwhelmed the raisin business.

The unusually hot weather in August, however, shortened the crop to some extent, and the unprecedentedly heavy rains also did their share toward causing a smaller yield. This has steadied the dry wine market, but the sweet wine and brandy markets, due to the efforts of producers themselves to market unmatured wines and brandies direct to the Eastern trade, are in a very uncertain and demoralized condition.

The price of old and matured sweet wines and brandies, which are principally in strong hands, is being maintained, but quotations made by vineyardists who are also wine-makers, and by the so-called coöperative wineries, have precipitated very bad conditions for sweet wines and brandies of the new vintage.

Coöperation is also needed among the various elements in the wine industry for keeping in touch with matters at the National capital. These matters must not be left to individual attention, but should be taken up closely by all interested in the industry. We have splendid friends at Washington in the administration. President Roosevelt himself is a mighty good Westerner; then we have Secretary Metcalf of the Department of Commerce and Labor, and Secretary Morton of the Navy, all of whom have been in close touch with Western conditions, and who may, I am sure, be relied upon to see that the West is fairly treated.

In the newspapers last week there was a synopsis of the report of the Commissioner of Internal Revenue, recommending that a tax be imposed upon the brandies used in the fortification of sweet wines. This means practically the repeal of the sweet-wine law, under which the vineyards of our interior counties have grown up and flourished. Should this recommendation be adopted by Congress, a large part of the vineyards might just as well be uprooted, for the consumption will be greatly curtailed by the added cost of wines unless vineyardists are willing and able to take even less than hitherto for their grapes—which is of course out of the question—and the cost of wine-making will be so enhanced that all plans for marketing any surplus abroad will immediately be frustrated.

And still, mark you, I have yet to see a single protest in the California papers emanating from the vineyard interests. The imminence of the danger to their interests which would follow a practical repeal of the sweet-wine law does not appear to have been realized by them. All this is due to the fact that at present it is "every one for himself and the devil take the hindmost."

Can the vineyardists afford to remain in such a condition of apathy? Should not this California Fruit-Growers' Convention adopt stirring resolutions to our Senators and Congressmen, and embody therein an appeal to the President against the adoption of the recommendation of the Commissioner of Internal Revenue so completely destructive to sweet-wine vineyardists of the State?

The large handlers and distributers have already sent their telegrams to Senators and Representatives in Congress, but they are only one element of the wine industry. The vast body of grape-growers is far more interested in this matter than the wine men, and yet they have, so far as I know, remained silent.

Considering the difficulties of obtaining the passage of the sweet-wine law and the benefits which California has derived from it, one would have supposed that an intimation even, that the Commissioner of Internal Revenue had recommended the alteration or repeal of this beneficial law, would have caused mass meetings to immediately assemble to protest that if such recommendation were adopted it might mean annihilation of a large part of the present vineyards of the State, for under such conditions only the heaviest bearers would be able to survive.

As I have frequently said before in the annual conventions, "God helps those who help themselves," and if the vineyardists of California expect prosperity, they must go out to meet it, and must fight for it, and not wait always for prosperity to knock at their doors.

WHAT THE BUREAU OF PLANT INDUSTRY IS DOING FOR THE FRUIT-GROWERS.

By PROF. P. H. DORSETT, of Chico.

Mr. Chairman, Members of the California Fruit-Growers' Convention, Ladies and Gentlemen: I am pleased to meet with you on this occasion, and feel highly honored at being requested to address you in connection with what the Bureau of Plant Industry, United States Department of Agriculture, is doing for the fruit-grower, the farmer, and others.

Since the organization of the Bureau in 1901, many bulletins have been published, setting forth the results of the work already accomplished. The work now being undertaken and planned for is as far reaching as our country itself, embracing, as it does, agricultural and horticultural problems of interest and value to our people, from Canada to the Gulf of Mexico, from the Atlantic to the Pacific, and even extending into Porto Rico, Cuba, and the Philippine Islands. Time, however, will only permit of my mentioning some of the more important work of immediate interest.

The Bureau is maintaining a Pacific Coast Laboratory and Plant Improvement Garden at Santa Ana, California, in charge of Prof. Newton B. Pierce. Here much has been, and is being, accomplished for the horticultural interests of the State. His experiments at Biggs, California, in the treatment of "peach leaf curl," prior to 1900, as outlined in Bulletin No. 20, proved beyond question that there was no longer any necessity for the immense loss annually sustained from the ravages of this disease. It was estimated upon conservative data at that time, that the work inaugurated or set on foot by the Department of Agriculture saved to the fruit-growers in a single year three quarters of a million dollars; this amount is insignificantly small to what it would have been had every grower sprayed his trees.

Here the California vine disease received special attention, and while every effort, so far, has failed to reveal the specific cause of the disease, and no absolute remedy has been found to stay its ravages, much data and valuable knowledge have been acquired that will materially assist in the experiments under way and to be taken up in the future, looking to a possible solution of the problem.

More recently, Professor Pierce has taken up the study of the walnut blight (*Pseudomonas juglandis*), a bacterial disease of the English walnut, which, it is estimated, caused a loss of $800,000 to the growers of southern California during the season of 1903. Spraying experiments for the purpose of checking or controlling the disease have shown that fully fifty per cent more nuts fell, on account of the disease, from unsprayed than from sprayed trees during the season. These results, however, have not been considered satisfactory, and at the laboratory a series of breeding and selection experiments is in progress, which it is hoped will eventually result in the production of commercial varieties resistant to disease, more prolific, and of better quality. These and many other problems of importance to the fruit-growers are receiving attention at this laboratory.

The Bureau within the last two years has established and is maintaining, under the management and direction of Prof. George C. Husman, United States Viticulturist, nine experimental vineyards of from ten to twenty acres each, located in various sections of the State, with special reference to soil, climatic, hillside, valley, and desert conditions; proximity to and distance from large bodies of water. The locations embrace the raisin and table-grape districts as well as those for the production of wine and brandy. At these stations it is intended to determine by test experiments the adaptability of varieties to the different localities, and to afford opportunities for the testing of all classes of grapes, with reference to their resistance to disease; and in case it is found necessary for the purpose, of producing new varieties resistant to disease and adapted to specific purposes and conditions. It is also intended to make, at these several stations, a comprehensive test of all resistant varieties; to test and determine by practical experiments, if possible, the congeniality of vinifera varieties to the various resistant stocks. Sixty-three varieties are now being tested to determine their relative rooting qualities, which will determine their commercial value as stocks. It has been estimated that the viticultural industry of the State of California represents an investment of not less than $100,000,000, and already more than 75,000 acres of vineyard in this State alone has been destroyed by disease of various kinds. The value of the work that will be accomplished at these stations, it seems to me, is self-evident, and the Federal Government, together with the California Experiment Station, which has agreed to coöperate in the work, should receive the hearty support and coöperation of every lover of the vine and its fruit.

The Bureau, in coöperation with the State Experiment Station, has recently established a date garden at Mecca, California. Some of the best known varieties of the world have been planted, and others are being collected and imported for planting. It is the purpose of this garden to demonstrate the commercial possibilities of date culture in California, by testing known varieties, and also by the production of new varieties, by breeding and selection, that will prove most advantageous for the commercial success of the work. This work, though but recently established, is giving promise of success, and a lively interest is being awakened as to its future success; so much so that the ever ambitious American, with capital to invest, is anxious for a chance to embark in this new horticultural enterprise. Prof. A. V. Stubenrauch, of the California Agricultural Experiment Station, who is in immediate charge of the work, realizing the possibility of disappointment and failure from premature investments in this connection, has issued a letter of warning to all those thus inclined, urging upon them the necessity of awaiting definite and practical results from the work already under way. That the enterprise will succeed there is but little doubt. However, the results thus far attained are not sufficient from which to draw conclusions that would warrant a reckless investment of time and money. Much remains to be accomplished, and many, practically all, of the problems connected with this as a commercial enterprise in California, are yet to be demonstrated.

Not until after the fruiting of the two "Washington Navel" orange trees at Riverside, California, in 1878, did this become a distinctive industry of the State—one that has grown from an annual yield of about 225,000 boxes for Eastern shipment in 1884 to about 10,000,000 boxes during the season just past. The original parent tree of the many thousands of those contributing to this magnificent yield of the golden fruit stands to-day in the orangery on the grounds of the United States Department at Washington, a living monument of the value of the work of the Office of Seed and Plant Introduction of the Bureau of Plant Industry. The annual profits to the growers engaged in this magnificent industry are reduced by the losses annually sustained from the decay of fruit in transit, amounting, as it does, to many thousands of dollars. For the purpose of determining, if possible, the specific causes of the decay, and suggesting remedies for its reduction or prevention, the Bureau of Plant Industry, through Prof. G. Harold Powell, assistant pomologist in charge of field investigations, and assistants, will start a line of investigative work in southern California, in connection with the harvesting, packing, and shipment of citrus fruit, to determine if possible wherein the trouble lies.

The Bureau, through its workers, has been successful in working out some of the more important problems connected with the storing, packing, and shipment of fruits in the East, as a result of which our fresh fruit markets have been extended into Europe and the way opened for shipping peaches, pears, and other perishable fruits with good profit. The result of this work is set forth in Bulletins Nos. 40 and 48. There is every reason to believe that the work of the Bureau in this connection will result in the saving of many thousands of dollars to the citrus-growers of the State.

The Department of Agriculture, in coöperation with Mr. George C. Roeding, of Fresno, California, one of the leading nurserymen of the State, was successful in introducing and establishing the fig wasp (*Blastophaga grossorum*) which has revolutionized the fig industry of the State, and made it possible for growers of this fruit to produce figs equal in quality to the best imported Smyrna product; and yet this industry is in its infancy, with many problems to be solved and much yet to be learned.

For thirty-five years there has been, from time to time, introductions of hardy, glossy wheats, of the durum group, principally from Russia, but also from Algeria and Chile. However, it remained for the Bureau of Plant Industry, through Mr. Mark A. Carleton, Cerealist, to demonstrate the commercial value of the durum or macaroni wheats. Previous to 1901, elevators and mills, as a rule, refused this wheat at any price, and it was rarely grown except in small quantities for stock. The production has increased from 100,000 bushels in 1901 to at least 6,000,000 bushels in 1903. Macaroni factories have been established, and are now competing with the foreign product, of which it is estimated $8,000,000 was imported annually. Thus through the Bureau a new industry has been established in the semi-arid Northwest. California's product is extremely deficient in the qualities that give value to the durum wheats, grown in the semi-arid Northwest, and these wheats when grown here deteriorate rapidly in regard to their gluten content. These conditions, however, are subject to modification through methods of breeding and selection. I am glad to note that the State Agricultural Experiment Station has undertaken the solution of this problem. Gentlemen, let me urge upon you the importance of, according to Professor Shaw, the gentleman in charge of this important line of investigative work, every possible support, financial and otherwise.

Hop-growing is an extensive industry in the United States, and increasing quantities are annually exported to Europe. California is one of the principal producing States. The best American brewers, however, for the manufacture of their very best beers, prefer to pay from 60 to 65 cents per pound for imported Bohemian or Bavarian hops to from 24 to 32 cents for American-grown. In what is the American hop inferior, and what should be done to improve it, are problems that are already receiving the attention of the experts of the Bureau of Plant Industry.

In April of the present year the Honorable Secretary of Agriculture, through Dr. B. T. Galloway, Chief of the Bureau of Plant Industry, authorized the establishment of the Plant Introduction Garden. You are all no doubt more or less familiar with the selection of the site and the location of the garden. It fills a long-felt want, and under efficient management, with proper support and coöperation, it is destined to embrace the most important lines of investigative work yet undertaken by the Bureau. Here plants of all kinds, having economic value, will be assembled from all parts of the world for propagation and testing, to determine their value for further distribution, or to be maintained and used in breeding and selection experiments for the purpose of developing plants resistant to disease, adapted to specific locations or conditions, better in quality, more prolific and better suited to our needs.

Gentlemen, the practices of the horticultural and agricultural industries of the country, and especially of California, need *revolutionizing.* In some instances this is already in progress; for example, the citrus industry of to-day in the principal citrus sections of the State is entirely different to what it was ten or fifteen years ago. The more intelligent growers find it necessary to change the location of their orchards, the methods of tillage, etc. Some of the more advanced thinkers of the craft realize that their methods of picking, packing, and shipping must be modified. Few of them, however, have considered it necessary to plant trees of known recorded parentage (pedigreed stock) having an established record for quality and fruitfulness, budded or grafted upon congenial stock, suited to specific locations and conditions. To-day, with most of us, a tree is a tree and a vine is a vine, regardless of its past history or condition. This is exemplified in the English walnut industry of southern California, where there is, perhaps, upwards of 10,000 acres of the best lands planted to trees, ninety per cent of which is seedling stock. The buds, scions, and cuttings that produce the stock of our horticultural industries are too often taken at random. We require of our nurserymen that the trees or plants furnished must be of such an age, height, and caliber, and these requirements are complied with. We fail, however, to require absolute assurance that such plants are from known disease-resistant stock, suited to certain locations and conditions, and of known fruiting quality or quantity. Here in California, where our good lands are expensive, the distance from large consuming markets great, and transportation charges in some instances almost if not quite prohibitory, competition with the same or other products from this or other sections to reduce the price, and combinations to prey upon the profits, are important factors, and as such are commanding the attention of our best specialists. Our extensive seed-growers realize the necessity of stock seed true to name and character from which to grow their products. Our best florists and market-gardeners growing their products under glass, the most intensive plant-growers of the country, realize the importance of special strains or pedigreed stock. Dr. Galloway, Chief of the Bureau of Plant Industry, has shown by experiments that in the growing of radishes under glass, one additional crop can be harvested each season by selecting the largest seed. Our attention has been called to the fact that an average increase of but a single bushel of wheat per acre would mean a gain of $15,000,000 to the farmers of California. From personal experience and observation I believe I can say, without fear of contradiction, that without increasing the acreage, the yield of the majority of our products, if not all, can by judicious and intelligent selection be increased from ten to twenty-five per cent and at the same time be greatly improved in quality. The breeding and selection of plants, not only for an increased yield, but for resistance to disease, adaptation to specific needs, locations, soils, and climatic conditions, will be one of the prime features of the work of the Plant Introduction Garden. The introduction of new fruits and new and valuable plants, seeds, bulbs, scions, cuttings, etc., the improvement of the products of our present industries, and the establishment of new ones, will receive special attention.

We have now a very fine collection of figs at the garden, embracing varieties from Austria, Greece, Algeria, Asia Minor, Turkey, Italy, Malta, Smyrna, and California. These will be used for breeding, selection, and demonstration experiments. We have several hundred pounds of pistache seed and 5,000 or 6,000 seedling plants. This nut in the United States, at the present, is used perhaps exclusively in confectioneries, while in European countries it is used the same as the peanut in America. The Bureau hopes to establish this industry in California.

Mr. Walter T. Swingle, in charge of the Laboratory of Plant Life History, has spent the greater part of six or eight years in studying the conditions of this industry abroad. In a recent letter relative to this matter, Mr. Swingle says: "I am sending you seed from Smyrna, Algeria, southern France, Sicily, Sahara, Syria, and northern Syria. This is the most valuable collection of seed that has ever reached this country, and it has taken me more than five years' work to get such quantities as we needed. I have the greatest confidence in the future of pistache culture for dry lands, and have just found a reference in an Arabic history to huge pistache orchards growing in the dry lands of southern Tunis. When the Arab conquerors moved westward through North Africa, in the innumerable conflicts which these contests entailed, these orchards were destroyed, but the fact of their presence in a region receiving only about ten inches of rainfall a year shows how promising the pistache is for culture in dry lands."

Mr. Thomas H. Kearney, one of the explorers of the Bureau of Plant Industry, is now in northern Africa, and will make a trip to Sicily, possibly in January or February, for the purpose of securing scions of the best Sicilian varieties, and he will also visit Tunis and secure the best varieties there. These will be used in budding and grafting the seedlings we have at the garden, preparatory to making a practical commercial test of the possibilities of this industry in California.

Another new fruit recently received at the garden is the Yang Taw (*Actinidia chinensis*). These plants, and specimens of their fruit preserved in alcohol, came through Consul-General L. S. Wilcox, who writes of them as follows: "These plants were secured from plants formerly obtained on the borders of Yunnan, in the foothills, in the southern part of the province of Szechuan (having a climate similar to that of southern California). The fruit is about the size of a hen's egg, has a thin, leathery, hairy skin covering it, and is full of meat. Seeds very similar to the gooseberry or fig, it is sometimes called the hill gooseberry. In bloom, it has a beautiful flower; when the fruit is picked and left for a few days until soft, it is very fine eating. It has the flavor of the gooseberry, fig, and citron, and makes delicious jam, pies, and sauce. I have packed in a box two bottles of the fruit, in order that the Department of Agriculture may get some idea of the two varieties sent; the larger variety seems to be the finest flavored. As the plants are carefully packed and strongly boxed, I trust they may arrive in good condition, and that the fruit may be more valuable for family use than the Navel orange." These plants were shipped from Hankow, China, via Shanghai, early in March of the present year; they did not arrive at the garden, however, until July 8th. We now have several plants of each of the varieties, that are growing nicely and appear quite at home.

I could enumerate many new introductions with promising possibilities; also many problems of interest and value to the horticultural and agricultural industries of the country that are being investigated by the Bureau of Plant Industry; but deem these sufficient to show that these industries are not being neglected by the Bureau.

The Plant Introduction Garden is a Government institution, and while established for work along broad lines, we are deeply interested in all local problems relating to horticulture and agriculture. We will, therefore, be pleased if you will communicate to us the more important problems in connection with these industries in the various sections of the State needing demonstration or investigation, so that we will be in a position to render, if possible, assistance to the Agricultural Experiment Station in coöperative experiments, or otherwise aid in their possible solution.

We extend to you and to all those interested in miscellaneous plant life a cordial invitation to visit the garden whenever convenient; to inspect and become familiar with the many new and interesting introductions received from time to time. We want your hearty support and coöperation. We are working to help you, and want you to assist us, if in no other way, at least by the interest shown in an enterprise that is destined to play such an important part in the future welfare of the foundation industries of our country.

ADDRESS BY DR. VAN DER NALEN.

Mr. President, Ladies and Gentlemen: I am not a fruit-grower, but I am a lover of California, and of her prosperity. Being a Californian, I have, I think, some suggestions to offer which may be of benefit. I am simply an engineer, the head of an engineering school in San Francisco, who, after a hard summer, felt himself tired out and wanted to go away out of the reach of telegraph and telephone and go to Europe for a rest. Not having anything to do in Europe, I traveled about a good deal, and looked out for California products. They would ask me, "Why, are you a Californian? You make splendid wines there. You grow splendid fruit there, but where are they? We can not get them. We want them here." Well, I listened to all that, and then they told me why. They asked we when the new crop of apricots was coming on. They wanted some of them to make jelly with our dried apricots. What, make jelly with dried apricots? Yes, don't you know, we are already waiting for your apricots. We love them; we want them. Taste this, and taste that. You have good prunes. We want them. California prunes are above all others. The Austrian prunes are going out of the market; the French prunes are going out of the market here. Why not ship them to us directly? We want your wines and your fruits.

I have here a paper containing an account of an exposition to be held in the city of Liege, Belgium, next year—an international exposition that is going to take place. A great many countries already have taken space there in that exposition—Denmark, Norway, Sweden, England, Scotland, Germany, Austria, France, Russia, and many others. You should exhibit your products there.

In Belgium, where that exposition is going to take place, it is densely populated; there are immense manufactories; most of the zinc and tin comes from there; glass works, iron and steel factories. Hundreds of thousands of workmen are employed. Well, you know there they have no eight-hour law; they work their men a great deal. Those people have always felt the necessity of a little stimulant. All of them drink alcohol; it muddles their brains, and then they go to work and break their glasses and do such bad work. Now the main industrial institutions of this country have formed anti-alcoholic societies, and they sell three or four thousand bottles of wine in their shops, or in their works, and this I think is wise. They encourage the drinking of wines; it does not muddle the workers' brains, and so far it is a magnificent success. The workman takes a drink of wine, which he needs, and his brain remains clear and unmuddled. There is wine in California. There is an immense population there, and why should you not send your wine there and get them to use it? These people drink lots of Burgundy. They only have a good crop of Burgundy once in seven years, and our Burgundy makes a superior color.

Now they told me that they wanted to deal directly with the producers of California. Send a good exhibit there next year and let them see and test your wines and fruits. Don't send a niggardly one. In Belgium there are eight millions of inhabitants and it is only about as large as Kern County. There are hundreds of thousands of people going to that exposition, and that is your opportunity, gentlemen. In the dry-goods stores and shoe stores in San Francisco five pounds of prunes are given away with each purchase—to help our poor fruit-growers. Do you want to see a sign on every street corner, like that of the Salvation Army, "Help our poor fruit-growers"? Oh, no, no.

You ought to send a good exhibit to Portland. Portland is doing good work, and you can get benefit from Portland. In St. Louis, also, I looked around for our California products, and I spent altogether there several hundred dollars for the benefit of California. Do not make a little bit of an appropriation for the Belgian exposition, for those Belgian fellows like your wine and will buy it direct, without any middlemen. You ought to pass a resolution and make up an appropriation to send some one there. I don't want to go there. I want California to be prosperous. More of our young people should study how to become fruit-growers and not so much electrical engineering, and then you will get lots of money from those European people if you are wide awake.

APHIDS ATTACKING THE APPLE.

BY PROF. WARREN T. CLARKE, OF BERKELEY.

Among the insects attacking the apple in California are three different species of aphids, or plant lice. Given in the order of their prominence, and probably of their economic importance, these are the well-known woolly aphis (*Schizoneura lanigera*, Haus.); the pyriform aphis (*Aphis pomi*, DeG.), sometimes known as the green aphis of the apple; and the globose aphis (*Aphis sorbi*, Kalt), also known as the rosy aphis. Any one of these species of aphids may become so numerous upon the apple trees that the value of the crop is much reduced, if, indeed, a complete loss does not follow. Probably every grower of apples in this State has had at some time the alternative of contending with these insects, or of losing a considerable portion of his crop. The control measures that have been used by the growers in the past have not been uniformly successful, and it may prove valuable at this time to point out some facts in regard to these insects and their control, in the hope that this review of the subject may lead to better results in the future.

The Woolly Aphis (*Schizoneura lanigera*, Haus.).—This insect, the woolly aphis, is most troublesome to growers of apples, though it occasionally makes its presence felt by the severity of its work on the roots of the pear, and a rather extensive discussion of it seems advisable. The wool-like masses of waxy material with which the insects cover themselves, and from which they take their name, are familiar to all apple orchardists. The insects themselves often escape observation. They are small, louse-like creatures, ranging in length from $\frac{3}{50}$ to $\frac{4}{50}$ of an inch, and can be most readily studied after being washed clear of their wool-like covering, using 80 to 90 per cent alcohol. This material entirely dissolves the waxy wool, and the exposed insects are seen to have a reddish chocolate color. This body color is also evident if a few of the living aphids are crushed. The observer will seldom find any but wingless specimens of these plant lice, as the winged individuals are only occasionally developed under exceptional conditions, probably depending on the character of the food supply. The presence of the woolly aphis is most evident upon the portions of the trees above ground, and they may do an immense amount of damage to both trees and fruit when present in this situation. This may not be the greatest damage done by them, however, though it is the most evident. This aphis lives and thrives beneath the ground surface, upon the roots of apple and pear trees more extensively than on the visible parts of the trees. When the aphids are present here, they usually are found in greatest numbers at the root crown just beneath the ground, though they do not confine themselves to this situation, and their presence constitutes a menace to the life of the attacked trees. The cause of possible death is not usually to be traced to the diminution of the flow of sap, but to the fact that the attack of the aphids at the crown causes numerous suckers to start, and these new and tender growths are immediately attacked by the lice. This attack causes many of these suckers to form abnormal growths of soft and unhealthy tissue, which, in time, may crack open and become the lodging and starting place for toadstool fungus. When this infestation by toadstool fungus occurs, the tree often dies in a year or two, and rarely or never recovers from an attack.

It can be readily understood that this underground habit of life in the case of the woolly aphis renders it an extremely difficult insect to combat. Under ordinary weather conditions this aphis is usually to be found at all times upon the limbs and branches of the trees, yet, during the winter, the number of individuals present is so reduced that it is usually a simple matter to destroy completely those living in this situation. The root-attacking forms, however, can not be completely destroyed without killing the tree, and from here individuals can and do migrate to the upper parts of the tree when warm weather returns, and so the branch attack is renewed. When we remember that these insects in most cases reproduce parthenogenetically (that is, without the presence of the male insect, as do other members of the family), we can understand how even one migrating root aphis can found a colony. The spread of these aphids from tree to tree, and from orchard to orchard, occurs in several different ways. Birds may alight upon infested twigs, and the lice adhering to their feet may be carried to other trees. Occasionally winged aphids appear, and these fly to other situations. Many of the aphids, when crawling about, are dislodged by the wind, and on account of their fluffy, waxy coverings are carried occasionally to quite great distances. The writer has taken such wind-transported aphids at a distance of half a mile from the nearest orchard. The distribution of the woolly aphis is indeed quite readily accounted for.

The great losses traceable to the woolly aphis have led to much study of the insects, with a view to their control, and so far as the branch-infesting forms are concerned, this control is rather readily obtained. The control of the root forms is quite a different matter.

This is the only plant lice for which a serious attempt has been made to control by means of predaceous insects. The woolly aphis has quite an array of insect enemies, the most prominent of which are certain of our native "ladybirds," or Coccinellidæ, which are each year shipped into the Pajaro Valley in great numbers. The most common of these are known to science as *Coccinella californica* and *Hippodamia convergens.* The two species occur together, and are called the "red ladybirds," not being distinguished as different. In both species, the wing-covers are red, varying to reddish-yellow. In *C. californica* these wing-covers are unmarked, while in *H. convergens* they often possess black spots in many variations. The head and thoracic regions of both species are black, differently marked with white in the two species. There are several other species of Coccinellids present in our California orchards, but the two mentioned are the ones most frequently met with. Both the larval and the adult beetles are predaceous upon the woolly aphis, and are popularly supposed to do good service in our orchards in destroying many kinds of aphids, including the pest under discussion. They have the habit of bunching together in certain of our mountain regions, so that it is possible to gather them up in immense numbers and they can then be shipped into the infested orchards and there be liberated.

The history of all plant lice is one of ups and downs. They are all able to multiply with inconceivable rapidity. No other insect can compare with them. Fortunately they are extremely subject to external conditions, which reduce their fertility, and they then become victims of their natural enemies, and may be nearly exterminated. The work of aphis destruction done by ladybirds, therefore, will at times be quite satisfactory.

Lace-Wing Flies (*Chrysopidæ*).—The larvæ of the lace-wing flies (*Chrysopa* sp.) are energetic destroyers of the woolly aphis. The adults are graceful, rather large-winged insects, of a delicate green color, with quite prominent golden-colored eyes, and are occasionally present in considerable numbers in our apple orchards. The rapid, but not long-sustained flight of these really beautiful insects is very characteristic, and they are quite easily recognized. Hibernation of the lace-wing flies takes place in the pupæ form in protected locations, on or about the trees. The cocoons in which pupation occurs are spherical, about one-eighth inch in diameter, white in color, and rather shell-like in texture. The adult insects emerge from these in the spring, and egg-laying begins. The eggs are placed singly or in groups of fifteen or twenty, dependent upon the species, each egg being attached by a thread-like stalk to the leaf or other object where oviposition occurs. The larvæ hatching from these eggs are voracious eaters, and it is supposed that only the fact that the later hatching eggs are each out of the way of danger on the end of the stalks saves them from the cannibalistic tendencies of their earlier appearing relatives. These larvæ of the lace-wing flies are rapid-moving creatures, six-legged and armed with prominent pincer-like jaws. They usually hold a place next in importance to the ladybirds as destroyers of the woolly aphis, and are to be numbered among the most helpful insects in finally disposing of a pest of plant lice in the apple orchard.

Syrphus Flies (*Syrphidæ*).—Hovering about the aphis-infested trees the observer will frequently see certain insects belonging in the group of true flies—two-winged insects. These creatures resemble some of the smaller solitary bees in general appearance and in the character of their flight, and indeed their appearance has been considered as a protective resemblance. These are the so-called syrphus flies, and are, in the larval form, predaceous upon the woolly aphis. The female syrphus flies place their eggs singly among the aphids on infested trees, and the maggot-like, slow-moving larvæ hatching from these eggs immediately proceed to devour the near-by lice, occasionally doing quite as much service in this way in reducing the number of the pests, as other larvæ of the lace-wing flies.

Other insects, both predaceous and parasitic, are present in our orchards assisting in the destruction of the branch-infesting aphids, but do not approach those just mentioned in efficiency. In the case of an attack of woolly aphis, the grower must judge, in the light of his past experience, whether it will be necessary to apply a remedy for the destruction of the pests, or whether the period of increase will be short enough to make it safe to place his reliance upon these helpful insects.

When it is decided to undertake control work against the woolly aphis, it should be begun early in the year, as soon as the lice commence to appear. In the experience of the writer, probably the most satisfactory and effective, and at the same time the cheapest, work can be done by what may be named the swabbing method. This consists essentially in carefully scrutinizing the orchard about once a week, and destroying the newly forming colonies of lice, by swabbing them with either benzine or gasoline. The apparatus necessary in this work consists of a cloth swab, at the end of a pole long enough to reach well up into the tree, and a covered receptacle in which to carry the liquid used. The really essential thing for success in this method is an operator who can be depended upon to do careful and quick work in finding and destroying the aphid colonies. A good operator can cover several acres of trees in a day, and by thus destroying the aphids when their attack begins, the orchard can easily be kept comparatively clear of the branch-infesting lice. If this work is not done thus carefully early in the year, the lice may gain a strong foothold, and more expensive and less effective spraying operations may become necessary. The writer has conducted successful spraying work against the woolly aphis, using both the 28° distillate oil in a two or three per cent mechanical mixture with water, and with a spray of tobacco decoction and kerosene oil emulsion.

The tobacco decoction was made by steeping tobacco stems and refuse from cigar factories for from two to three hours in water that was kept heated to just below the boiling point. One pound of tobacco refuse was used to each two gallons of water, and by this steeping process a quite strong tobacco juice resulted. The *kerosene emulsion* was made by dissolving seven and one half pounds of ordinary laundry soap in fifteen gallons of hot water, and to this adding five gallons of kerosene oil. The soapy water and the oil were thoroughly churned together for from fifteen to twenty minutes. This was best done by pumping back the material on itself through the spray nozzle. The result was a fairly stable emulsion of a creamy consistency. The spray material was made up by taking forty gallons of the tobacco decoction, and to it adding three and one half gallons of the emulsion. This was kept well stirred in the spray tank while being applied, and proved quite effective in destroying the lice when care was exercised that all were thoroughly wetted by the spray mixture.

If we had simply the branch-infesting lice to deal with, there would be grounds for hoping to entirely eradicate the pest, but on account of the root attack, we can only hope to palliate the trouble. As has been previously mentioned, the great danger from the root attack comes from the aphids clustering at the crown, and rendering this region susceptible to the entrance of toadstool fungus. It has been known for many years, and entirely confirmed by our own experiments, that the aphids can be driven from this location by working into the soil about the trunk of the tree a liberal supply of wood ashes, and repeating this treatment about once in two years. Other materials have proven quite as effective—for instance, the use of tobacco stems and refuse. To apply this, dig the soil away from the trunk of the tree for a radius of two feet, and then fill this opened-up region with a mat of this tobacco material, covering it with an inch or two of soil. The effect of both these methods of treatment is to cause the aphids to withdraw from the crown of the roots where their presence is the greatest menace to the life of the tree. In the other situations where they find lodgment, their powers for harm are comparatively small, if the tree is well cared for. In the case of new plantings in regions liable to serious injury, stock grown on resistant roots should always be used. The Northern Spy appears to be the most satisfactory resistant in use. Undoubtedly properly selected roots of this variety are able to successfully withstand the attack of this aphis, and new plantings made upon this root in regions most susceptible to the injurious action of this insect can be kept thoroughly clean from the pest at a very small expense.

Two other species of plant lice, occasionally causing damage in the apple orchards of California, are found only above ground. They are known to science as *Aphis pomi*, DeG., and *Aphis sorbi*, Kalt.

Aphis pomi, DeG.—This aphid is sometimes known as the "green aphis of the apple," but is better described as the "pyriform aphis." It frequently does great damage to young apple trees in some parts of the State. The writer has seen many trees so severely injured by the attack of this plant louse that their removal and destruction were necessary.

This aphis winters in the egg form on the smaller twigs of infested trees. These eggs sometimes are so abundant as to be very conspicuous. They are shining black in color, quite small (about ½ mm. in diameter), and are placed in quite exposed situations on the smooth bark of the twigs. Sometimes these eggs will be laid in such profusion that the infested twigs will have the appearance of being peppered with them, and can be easily distinguished from twigs not so affected. From these eggs wingless parthenogenetic female aphids hatch in the spring, and they and their rapidly produced descendants soon cover and either dwarf or destroy the new growth of the tree. Occasionally winged individuals appear among these, and by means of them the lice spread from tree to tree. Parthenogenetic reproduction continues until quite late in the year, when male and female aphids appear, and by these females the wintering eggs are laid.

The greatest damage done by this aphid is to young trees, and because of the fact that their attack causes the affected leaves to so curl that the lice are protected quite effectively, remedial work directed against them must be carefully and thoroughly done. At pruning time, all twigs bearing eggs should, as far as possible, be cut out and destroyed. No spray materials strong enough to destroy these eggs can be safely applied to the trees, so winter spraying offers little hope of control. When the lice first appear in the spring, very satisfactory control work can be done by bending down and dipping the affected twigs in tobacco juice prepared as already described. When this bending down is not possible, then the infested parts of the tree should be liberally sprayed with the same material. The writer has in his experimental work obtained a good degree of control in the way thus described. It should be borne in mind that delay in beginning the work renders the task of suppression much more difficult and expensive. The same series of predaceous Coccinellidæ, Chrysopidæ, and Syrphidæ noted as occasionally destroying the woolly aphis, also attack this, the pyriform aphis, but as this species increases more suddenly, they are of rather less value in preventing injury. Occasionally also we find the eggs of this aphis destroyed by one of the parasitic Chalcid flies, and, indeed, in some parts of California, the great majority of the eggs of *Aphis pomi* were so destroyed in the fall of 1903. Unfortunately, however, enough aphid eggs escaped to start the infestation the next spring, and in many instances by midsummer the attack of the lice was as severe as though the eggs had not suffered so severely during the previous hibernation season.

Aphis sorbi, Kalt.—The third aphis that we have to deal with in our apple orchards has been called occasionally the "rosy aphis of the apple." We believe, however, that the name "globose aphis" better describes it, and segregates it from the aphis previously described, that being pear-shaped, while the one at present under discussion is comparatively globose in form. The two species of aphids (*A. pomi* and *A. sorbi*) are sometimes found working together, and indeed, until quite recently, were considered as one species under the name *Aphis mali*, Fabr. Recent studies, however, have fully established the correctness of this separation into two species, and though they are frequently found in company, yet they are easily distinguished one from the other.

The species now under consideration (*A. sorbi*) is generally found upon the older trees, and while it seldom appears in sufficient numbers to reduce the growth of these, yet it does frequently cause considerable loss by stunting the growth of the apples themselves. We have had the opportunity to observe the work of this aphis in several different sections of the State, and find that its life is passed about as follows: Eggs are deposited on the twigs and trunks of the affected trees in the fall of the year, and the insects winter in this form. These eggs are never so numerous as is the case with *Aphis pomi*, nor do they seem to hatch so early in the spring as do these latter. The newly hatched lice seem to prefer to feed in the neighborhood of the young fruit, or even upon it, and often in this situation they can be found in great numbers completely covering the small apples. The individuals found at this time are for the most part wingless parthenogenetic females, and many generations of lice may be produced here with but few winged specimens appearing. During the early summer the winged insects are seen in great numbers, and a migration seems to occur. It is claimed by certain observers that at this time this aphis seeks some food plant other than the apple. While the writer has never been able to identify this aphis on any plant other than the apple, yet the fact remains that during the summer *Aphis sorbi* entirely desert these trees. In the fall, winged viviparous females and males appear on the apple trees, and these females give birth to oviparous females which lay the wintering eggs. The life cycle is an interesting one, and presents certain features worthy of protracted study. The main damage done by this aphis, as has been previously stated, consists of a stunting and dwarfing of the affected fruits, and the apples so attacked never recover, but remain upon the trees small, distorted, and useless. We have examined some orchards where the loss caused by this aphis would average from one and a half to two boxes of fruit to the tree.

These lice also attack the leaves of the tree, causing them to curl and twist together and the lice find protection in these distorted leaves. As in the case of *Aphis pomi*, control work directed against them must begin early in the season, and must then be thoroughly done. If we delay operations until the leaves become well curled, our task is rendered much more difficult and expensive. The writer has found both the tobacco decoction and the mixture of this material with kerosene emulsion (described on a previous page) effective sprays for the destruction of *Aphis sorbi*, when used early in the season. If for any reason the spraying operations have to be delayed, then the 28^{c} distillate oil in a two to three per cent mechanical mixture with water, as used in combatting the woolly aphis, will be found more satisfactory.

The same series of predaceous and parasitic insects noted as attacking both *Schizoneura lanigera* and *Aphis pomi* are found at times devouring the aphis here under discussion.

Our studies then of these three aphids attacking the apple show that a great aggregate loss is caused by them annually in this State.

While in some cases a let-alone policy will often be followed with but little loss, notwithstanding the very small part played by predaceous and parasitic insects in assisting to reduce the numbers of the lice, we are forced to the conclusion that insecticidal materials and resistant stock are the only reliable and effective control measures yet at hand. This use of insecticides will be effective only when the orchardist is observant, timing his operations properly and applying the available remedies in the proper manner. When this is done he can cheaply control these pests, and be sure of the most satisfactory results.

APPOINTMENT OF LEGISLATIVE COMMITTEE.

PRESIDENT COOPER. I will announce the names of the committee that was requested this morning. Those who were not here yesterday evening probably have seen in the morning paper that two resolutions were passed, one for an increased quarantine appropriation in the city, and the other for an increased appropriation for the investigation of parasitic insects. The motion this morning was to appoint a special committee, having those matters in charge, to go before the Legislature next month.

DR. DINSMORE. You will pardon me for this slight correction.

The motion made by me did not regard that second proposition at all, only the first. The motion was that a committee of five be appointed, to be distributed over the State, and the name of Judge Lieb from here, to have charge of the matter of the increased quarantine appropriation for San Francisco.

PRESIDENT COOPER. I supposed there would be no objection to this committee attending to another matter.

DR. DINSMORE. No objection, but the motion did not cover it.

PRESIDENT COOPER. I will name Judge S. F. Lieb, of San José; A. P. Johnson, of Riverside; H. P. Stabler, to represent the northern district; John S. Dore, to represent the San Joaquin Valley; and A. N. Judd, to represent the apple district of Pajaro Valley.

ADDRESS BY JUDGE B. G. HURLBURT.

Mr. Chairman, Ladies and Gentlemen: In reading the President's message, I was particularly struck with that portion of it which referred to our present prosperity and our future prospects. It occurred to me that if he had attended this convention before penning that message he at least would have excluded the fruit industry of California. From the remarks that have been made here I think it would have conveyed to him the idea that the fruit industry is in a very depressed condition. It seems as though those who have participated in this meeting are not sanguine of any improvement; they are not sanguine that the condition may be bettered; that coöperation can be made successful; and in that event if it should be a failure, there is one other course which invites our attention—that is, retrenchment in order to avoid bankruptcy. Domestic economy can be practiced without coöperation. It is the province of every family to regulate its own expenditures; its members can restrict themselves to just what amounts to the necessaries of life, which means food and clothing. But political economy requires coöperation. Now, as a matter of fact, this science of political economy, or science of civilized government, is not well understood in California. The vote cast at the last election upon the constitutional amendments shows conclusively that we are not so well educated in the science of civil government as the people of our government should be. The vote upon those questions was not more than one half of the votes cast, and on many of them not more than one third. The reason assigned for not voting on those constitutional amendments by many with whom I have conversed was that they did not properly understand them, and did not fully understand what effect they would have upon our State government.

Now, much has been said about introducing agricultural education in our schools. I approve of it, although it can not be taught to any great extent. We may, perhaps, create a taste for it which will lead many of our men, when they start out in life, to adopt agricultural pursuits; but agriculture, above any other science, needs demonstration. Object lessons must be called into requisition there. Agriculture can not be successfully taught through experiment, along with the learning which you derive from the books. Now I would suggest that this study be introduced into our schools; that the science of civil government should be pursued there; but to introduce it into our classes with our present curriculum would be a physical impossibility. The child is crowded to its utmost capacity; it would produce intellectual dyspepsia; it would be as destructive to the brain as physical dyspepsia is to the stomach. That has been the great fault of our educational system—cramming. We often hear them boast, those educators, of the great improvement which has been made in our system of education within the last fifty years. Why, Mr. Dore related here the incident where students were passed through the high school, had graduated and could not solve the simple rule of three—could not tell what the rate of taxation was necessary to levy upon a certain sum in order to produce a certain amount. Now, with all your boasted improvements in the system of education, you could go back fifty years and if you could find a boy of sixteen who had attended school four months in the summer and three months in the winter until he was twelve, and after that three months in the winter until he was sixteen, who could not solve that problem, he would be pronounced stupid. Those graduates are obliged, under our law, to prepare to enter the university. Are they prepared for useful lives? Are they prepared to go out into the world? Now, we have an ironclad law which provides that every student who enters our high school shall pursue a course of study which will enable him to enter our university.

Now there is the initiative. I can not say positively where this law initiative came from, but it bears all the ear-marks of the State University. Now, Mr. Dore has said that he thought no more than three per cent of the students who had graduated from our high schools ever entered the university. He said, to be liberal, he would allow five per cent; ninety-five of the scholars must be sacrificed in the interest of the five who finally enter the university, instead of pursuing such studies as will prepare them to enter the duties of life. Is not that foolish? The sentiment prevails to a great extent that when we have admitted our children to the grammar school, we should not be taxed any further. That sentiment is growing not in the interest of the educators, but in the interest of the taxpayers. Now what was this penalty? After breaking down the Constitution, after amending the Constitution to fix this penalty, they provided that those schools which were not admitted in accordance with the law, should receive no State aid. And there is the penalty for you, where the law itself provides that they shall pursue such studies. That is why in my opinion our educational system is not all it should be.

Now I know there is, you may say, an educational boom, and we have in the State of California to-day an educational trust, which has as firm a grip upon the throats of the taxpayers as the coal trust, the oil trust, or the steel trust has upon the consumers, or the transportation association has upon the shipper to-day. They can demand the passage of any law by the Legislature; they have come to believe that when they have consulted the State officers and boards, the doctors, lawyers, and schoolteachers, they have got the whole thing; that that is all there is in it; that the common people have no rights which a white man is bound to respect.

We have, perhaps, the most expensive State government and the most expensive State educational system of any State in the Union, in proportion to population. We pay out for education annually, to school teachers in salaries, $5,113,222—to common-school teachers. That does not include the high schools. The whole expense of our common schools is $7,888,173. Our high schools—these ironclad high schools, where all are required to pursue such studies as will qualify them to enter the university—cost us $1,133,790 annually. Our normal schools cost us $360,000 annually. Our polytechnic school costs us $59,361; the school for the deaf, dumb, and blind, $63,000; the State University, $979,262. Perhaps, in justice, I ought to exclude the amount embezzled by the late secretary, which amounted to $52,000, lost on horse races. [Laughter.] That leaves an annual disbursement of $927,000. The grand total is $10,862,586. That does not include our private schools. We have 37,000 students in the private schools of this State. It does not include the universities outside of the State University, which, taken altogether, might safely be estimated at $2,500,000 or $3,000,000. If education was all that was claimed for it, our almshouses would be empty, our prisons would be to let; but on the contrary, they are full to overflowing, and our penal institutions are well represented by that class who have received the benefits of higher education.

In addition to all this, we are called upon to levy an additional tax of over $2,000,000 for the coming year; and of that, $1,625,000 is to be a perpetual tax. They ask for a law which will provide for an additional tax of $1,640,000 to raise the salaries of our school teachers —$1,640,000. It is easy enough to estimate it. We have 407,000 census children in the State, and the proposition is to increase the county taxes from $6 to $8, and the State tax from $7 to $9, or $4 a child. Now the school teachers in the State of California receive higher wages than in any other State in the Union, and forty per cent higher than the average wages paid in all other States in the Union.

The men receive $73.87, and the women $66.40 per month. This proposition of increasing the taxes will raise the salaries $20 per month. Take into consideration the depressed condition of our fruit industries alone; but our wheat fields are becoming exhausted, we can not produce half the crop that we once did. And they ask to have our taxes raised, and for what purpose? As I told you, we have an education trust which extends from the University down to the teachers in the kindergartens; they command and they are obeyed. We, as common people, are not allowed to know anything about the taxes. We are not allowed to exercise our judgment about these most important matters, as are the scientific, learned men with a suffix to their names.

The Convention adjourned until 1:30 P. M.

AFTERNOON SESSION—FOURTH DAY.

FRIDAY, December 9, 1904.

The Convention was called to order at 1:30 P. M. President Cooper in the chair.

REPORT OF COMMITTEE ON RESOLUTIONS.

PRESIDENT COOPER. The Committee on Resolutions reports the following:

RESOLUTION ON INTERNAL REVENUE.

WHEREAS, The Commissioner of Internal Revenue has recommended that a tax be placed upon brandy used in the fortification of sweet wines; and,

WHEREAS, Relying upon the continuance in its integrity of the present sweet-wine law an enormous acreage of sweet-wine grapes has been planted, representing an investment of many millions of dollars, which will be jeopardized by the increase of cost in the manufacture of sweet wines, so limiting the market as to preclude the possibility of providing an outlet for the production from such planting.

Resolved, That the fruit-growers of California in convention assembled, believing that the benefits to the revenue of the General Government which would be derived from the adoption of the Commissioner's recommendation are not commensurate with the distress and ruin to a struggling California industry which would ensue therefrom, do request the Senators and Representatives in Congress from the Pacific Coast to respectfully implore of the President and the Administration not to press the repeal or alteration of the present sweet-wine law.

Resolution unanimously adopted.

PRESIDENT COOPER. The committee has another resolution which they report do pass—the resolution for the purpose of asking the Legislature to pass a law requiring instruction in agriculture.

RESOLUTION FOR TEACHING AGRICULTURE IN THE PUBLIC SCHOOLS.

WHEREAS, We consider nature study with special reference to agriculture of great value to all children of school age; and,

WHEREAS, It is, in our judgment, imperative for the best good of the children that all the teachers in the public schools be qualified to present such truths in the best possible manner; therefore, be it

Resolved, By the California Fruit-Growers' Association, in annual convention assembled in the City of San José, this eighth day of December, 1904, that we ask the Legislature of California to take immediate action requiring a thorough course of elementary training in agriculture as a prerequisite to graduation in all our several Normal Schools.

MR. WHEELER. What is the extent of the education to be imparted. to the child? Is it to be of a practical form, in educating him to plow our fields and prune our trees, or is it in this theoretical education, book learning? I am opposed to the resolution. I hardly see how we can practically educate the youth of our schools, and get the teachers to go out into the fields and practically educate the children in plowing and pruning. The young lady school-teacher would not present a very pleasing appearance, and would not accept the work very graciously in standing behind the plow and showing the boys how to handle it. She would dislike a great deal to handle the long pruning-shears. Now, if you are to give them scientific education, as it is called, if you will take the history of the scientists in this State who went out to develop pruning, you will find that they have all been failures. I don't think there is an exception. Therefore I say, Mr. President, I hope that motion will not prevail. I hope there will be no more burdens added to our schools; I hope there will be no more misery added to the teachers.

MR. DORE. Ladies and Gentlemen: Those of you who heard what I had to say upon this subject the other day will understand clearly the purpose of this resolution. I am a little shocked that this Convention of fruit-growers should go back and be against anything that looks to be progress. And from the large gathering at the institute at Berkeley I believe I am safe in saying that that resolution received the strongest vote of any resolution presented. I have been abroad in the State at work in the farmers' institutes in Merced County, in Fresno County, in San Joaquin County, and in Sacramento County. It was, without a single exception, approved by the farmers of all the different institutes, where they saw the beneficial aspect of this proposition.

A MEMBER. I wish to speak for the Granges, the Patrons of Husbandry of the State of California and of the United States. The Granges are in favor of some agricultural education. Now if a child has to read out of a book, such as the State series, such stories as "Mary had a little lamb," why can they not just as well read out of a book which says something about what they love? Is there any harm in that, if they read about what they love? Why not talk about the birds? Why not talk about the animals? Why not read about those things we are interested in? We do not ask that our schools in the city shall adopt this if they do not wish. Why should we not train the child to be interested in its home? Are you going to train your child to be interested in the things surrounding the city homes, or in its own home? If we must have our children read, why not have them read about those things in which they are interested instead of about "Mary had a little lamb"?

The Chairman put the question, and declared the resolution carried.

RESOLUTION FOR A REFERENDUM VOTE ON ORGANIZATION.

Resolved, That the Commissioner of Horticulture be requested to submit by mail, to the prune-growers of the State, a referendum asking for their vote: first, for or against any plan of control of the marketing of the prune crop; second, if in favor of such control, to vote either for the coöperative or profit-sharing plan submitted by the committee of this Convention, or if neither of these plans be satisfactory to them, to indicate a plan which would be satisfactory.

MR. STEPHENS. Without wishing to interpolate anything unpleasant into the proceedings of the Convention at this time, I wish to refer to the fact that there are two propositions, and Mr. Sprague takes one side and I take the other. We go on and discuss them and get very much interested, and the more we discuss them the more convinced we are right, and we form a firm opinion that we are right, so that when a selection is made, if my ideas are indorsed, Mr. Sprague will say, "No, I will have nothing to do with it." On the contrary, if Mr. Sprague's are indorsed, I would say, "I will have nothing to do with it." We beget differences of opinion during these discussions, and those opinions crystallize. They can not be eradicated by reason or otherwise; that in itself will be sufficient to prevent organization, I fear.

MR. SPRAGUE. The whole proposition must rest with the prune-growers. This is simply to submit the only plans that have been suggested within the last two years to the prune-growers of the State direct. In the first place, if they desire any change, or if they desire to leave things just as they are, it would be important to find out if they are satisfied. Secondly, if they do desire some such proposition, which of these they will favor. Thirdly, if neither of these plans, then to suggest a third plan which will receive their approbation. This movement is so far above personal claims that the prosperity of this great State rests on the issue, whether we are able to secure this control or not. If we can, we can pay our taxes; we can invite millions of other people who are not in California to come to our fertile acres and till them. All things are possible if we but arouse ourselves.

MR. STEPHENS. I will say to Mr. Sprague that the importance of this question, or the importance of any question, let it be what it may, were it introduced by the devil himself and he should come upon this floor and advocate something that was right, I would work shoulder to shoulder with him and let no prejudice on account of personalities intervene or interfere with my action. [Applause.]

MR. SPRAGUE. That is good.

MR. STEPHENS. I do claim that a man should be above personal feelings or personal interests upon any occasion; he should raise himself to a higher level. And if there is any man in this world who can do it, I believe, sir, that I can do it. I do not differ from you on many propositions. I am willing to indorse anything that, in my judgment, is right, whether it emanates from you or anybody else. But if I think it is wrong I will not do so, even if it emanated from my brother or my father. [Applause.]

MR. SPRAGUE. That is right.

The Chairman put the question, and the resolution was declared carried.

RESOLUTION IN FAVOR OF AGRICULTURAL EDUCATION.

Resolved, That it is the conviction of this Convention of the horticulturists of California that our legislators should do more to promote agricultural education and our State College of Agriculture, and that adequate appropriations of money therefor are essential and should be made without unnecessary delay.

On motion, the resolution was adopted.

RESOLUTION IN FAVOR OF A STATE EXHIBIT IN BELGIUM.

WHEREAS, The late exposition at Hamburg opened up a great market for our fruits; and,

WHEREAS, Another opportunity will be presented at an exposition in Belgium to display our products to the densely populated kingdom of Belgium and the thousands from different parts of the world; therefore, be it

Resolved, by the State Convention of Fruit-Growers, That a committee be appointed by the Chairman to secure an adequate appropriation by the Legislature to defray the expenses of a creditable display of California fruits and wines at said exposition.

MR. STEPHENS. I am decidedly in favor of that resolution. I do not believe that the money of the taxpayers of this State could be used to a better advantage than to promote such schemes. This to me seems a practical scheme; it is along the right lines, and inasmuch as there are hundreds of thousands of dollars of our money spent for useless purposes, this certainly would be spent in a good cause and promote the interests of the State, and therefore I hope that the resolution will be adopted.

Resolution carried.

RESOLUTION OF THANKS TO THE SAN JOSE CHAMBER OF COMMERCE AND OTHERS.

WHEREAS, The Chamber of Commerce of San José kindly furnished the hall for meeting and arranged a very delightful excursion over the Interurban to Los Gatos and return; therefore, be it

Resolved, That the members of this Convention extend hearty thanks to the Chamber of Commerce for the courtesies extended; also, *Resolved*, That this Convention extend thanks to the Board of Trade of Los Gatos, who so kindly and thoughtfully provided conveyances for showing their guests about that beautiful city; also,

Resolved, That the thanks of this Convention be extended to the Sorosis Fruit Company, through its manager, Mr F. W. Crandall, for courtesies extended to this Convention in showing the guests through their extensive plant and also in liberally supplying delicious coffee and doughnuts in their social hall for all who wished to partake; also,

Resolved, That we thank the ladies of the San José Grange for the delightful entertainment furnished on the evening of the 6th instant; also,

Resolved, That we hereby extend our gratitude to the transportation companies for the reduced rates given to delegates to this Convention; also,

Resolved, That we thank the press of California for the full reports of the proceedings.

Adopted unanimously.

PRESIDENT COOPER. Judge Hurlburt is asked to come forward and finish his address.

JUDGE HURLBURT. I am aware that there is considerable business to be done yet, and although I feel grateful for the appreciation of what I have said, and what I probably might have said, there are some very important subjects to be discussed. I therefore only wish to express my thanks and state my reasons why I do not propose to occupy the time of the Convention any further.

Now I might have continued my address for an hour and a half. But I have given you a few general ideas which may cause food for reflection. I do not think it would be courtesy to the members of the Convention, who are anxious to see the balance of the program carried out. Thanking you, I must decline to make any further speech.

MR. STEPHENS. I move that a vote of thanks be extended to the Judge for his magnanimity and for the address which he delivered.

Motion carried.

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS.

PROF. FOWLER. The committee to which was referred the President's address begs leave to make a report as follows:

San José, December 8, 1904.

To the Officers and Members of the Thirtieth State Fruit-Growers' Convention:

Ladies and Gentlemen: Your committee, to which the President's address was referred, respectfully submits the following report:

That we indorse the advice and counsel given the horticulturists of the State through the President's address.

That we especially call attention to and commend the action of our President in the steps taken to guard our State against the introduction of infested or diseased Eastern nursery stock.

And we further heartily indorse the action in employing the partial services of Mr. George Compere in his search for parasites that may be introduced for the destruction of insect pests that now infest our orchards.

That this Convention memorialize the coming Legislature to amend the present pure-food laws, or pass a new law that may be effective in protecting the people of our State against the sophistication or adulteration of foods and food products.

All that portion of the address referring to transportation, the trust problem, and coöperation, has been acted upon by this Convention and needs no additional comment from your committee.

(Signed:) D. T. FOWLER.
W. E. WOOLSEY.
G. W. WORTHEN.

On motion, Vice-President Stabler put the question that the report of the committee be made the sense of the Conventicn, and it was carried unanimously.

REPORT OF THE CALIFORNIA EMPLOYMENT COMMITTEE.

Mr. Stabler read the report of the Committee on Labor, or Employment Committee, as follows:

To the California Fruit-Growers' Convention:

GENTLEMEN: Your Employment Committee begs to submit the following report for the season of 1904:

The apparent light fruit crop which confronted the growers in this State during the spring shows very conclusively to this committee that any particular efforts directed toward securing agricultural help from the Eastern States was, in all probability, unnecessary. The coöperation of the California Promotion Committee with the Employment Committee has resulted in the fruit-growers of the State of California receiving large numbers of people from agricultural districts of the Eastern States, and the only efforts that have been made in exploiting the Eastern field during the past season have been thus put forth by the Promotion Committee.

Our work in the Eastern field has shown us conclusively that desirable agricultural help is just as scarce in the Eastern, Middle, and Western States as it is in California. In fact, as we reported a year ago at the Fresno Convention, our representatives in the Eastern districts found farmers and fruit-growers searching for help with as much avidity as our own agents.

In order to attract the better class of young men and families from the East, this committee desires to insist that the fruit-growers and farmers of California must arrange for caring for these newcomers in a manner better than the conditions now existing on many of the farms, orchards, and vineyards of California.

The efforts of the California Promotion Committee in inducing our landholders, throughout the State, to cut up their possessions into small holdings will very materially assist this committee in its work of inducing small farmers, with their families, from the East, to come to California, purchase homes and become permanently settled on our soil. We feel that our troubles in securing efficient help will be largely overcome when we have in proximity to the orchards, vineyards and farms a permanent class of settlers, rather than the transient help on which we now depend for carrying on so much of our work. In fact, we have discovered that very many farmers in the East are anxious to come to California when they can be assured of securing small tracts, and developing them, securing employment in bearing orchards and vineyards in the vicinity.

The fact that our first year's campaign in the East was productive of good results, bringing into our State nine hundred and seventeen people who were placed in positions, and indirectly bringing in probably twice as many more who were attracted to us as the result of our advertising efforts, proves to us that when the necessity again arises, a similar effort can be made, which will very much alleviate conditions of shortage of help necessarily existing in years of bountiful harvest. The committee therefore organized permanently, for the purpose of being in a position to again assist the fruit-growers in this State, if necessity arises, and has the assurance of the Promotion Committee that its efforts in securing immigration will always be devoted to bringing into our State families of agricultural workers who desire permanent homes.

Both the Southern Pacific Railroad Company and the Santa Fé Railroad Company have assured our committee that they realize the importance of an adequate supply of efficient agricultural help during the fruit season, and stand ready to fully coöperate with us when called on to do so.

All of which is respectfully submitted.

H. P. STABLER, Chairman.

Upon motion, the report was adopted.

Mr. Worthen then read the following:

RESOLUTION INDORSING PROFESSOR CHILDS.

WHEREAS, We were greatly interested in the address of Prof. C. W. Childs relating to his experience at the St. Louis Exposition and in visiting many points in the East, particularly touching the high price at which our prunes are sold by the retailers, and also condemning the practice of over-processing our prunes, thereby causing them to mold; therefore,

***Resolved,* That we express our opinion that correcting these evils should claim a large share of the attention of the prune-growers of this State, as both practices seriously curtail the consumption of our prunes.**

The Committee on Resolution moved its adoption, and it was adopted by the Convention.

ADVERTISING CALIFORNIA'S CURED FRUIT PRODUCTS.

BY EDGAR M. SWASEY, OF SAN FRANCISCO.

This is my first attendance at a convention of fruit-growers, but from what I have learned since coming to San José, it is evidently a matter of long standing with many of you—yet the price of prunes seems to be going down.

The people with whom I have been closely associated for the last ten years do not attend many conventions, except so far as they may disseminate general knowledge, or to meet in social intercourse for the purpose of promoting harmony. When it comes down to a matter of business, to a matter of dollars and cents, most of us are carrying an ax for the other.

Gentlemen, you have spent years trying to find the answer; you meet regularly and you read papers about coöperation, and you nod your heads in approval. Each one of you reads a paper which is supposed to solve the problem entirely, yet you have not yet changed the conditions and the price of prunes is still going down.

The god of success loves a man who can and will do things, a man who will think and then act—a man for the occasion—and that is just what you have got to do if you want to get more money for your prunes.

The coöperation we have heard so much about here this week is absolutely meaningless, unless you really coöperate. There can be no coöperation without something to coöperate with, and that's for you to decide—some definite plan—some end in view that is recognized by business minds to be the proper and successful end.

The condition of the prune industry is unsatisfactory, and you have no one to blame but yourselves and the peculiar conditions of the trade.

Here we are to-day in the beautiful city of San José, the center of the prune region, and not a single one of us can buy for good American money a dish of preserved prunes ready to serve. Try it to-night when you go to dinner, and it is safe to wager that if you are successful in getting a dish of prunes, you will not eat them after you get them. There isn't one hotel or restaurant cook in forty who knows how to cook prunes.

If you have not convinced the people of San José and the Santa Clara Valley that prunes are a table delicacy, you ought not to blame some one in Pennsylvania for not eating more prunes. The prune business is a good deal like charity, it ought to begin at home.

Listen to what I tell you—roll it around your common sense and hang it out on the line of reason for further thought—you haven't convinced your own people that prunes are good to eat. And now you complain that there is an over-supply. Indeed there is, and always will be, as long as a single prune tree remains in Santa Clara Valley and you continue your present methods.

You have tried to raise the price of prunes by all sorts of methods except the right ones. You have tried to blame the dealers. You have tried to corner the market. You have blamed the apathetic spirit which has made coöperation difficult. You have done everything to charge this responsibility to some one—but you have pursued your quest with your eyes focused afar off.

The answer is before you—staring you in the face, laughing at you, if you will, and it stands out in letters of gold on a beautiful background of common sense—the commonest kind of common sense, too. This is what it says:

Create a demand on the part of the consumer and control your trade.

There it is, gentlemen—a proposition as plain as day—holding out the hand of success, trying to point your way. Why don't you observe it?

Gentlemen, I have been thinking about your industry for some time. My business puts me in close touch with the keenest minds in the business world. I have seen a small business on a back street grow to a world-wide affair. I have noted the rise of many a business from comparative insignificance to a business doing millions of dollars annually. I have learned the reasons for these successes in the school of practical experience, and I will stake my reputation as an advertising specialist—my most valuable asset—on the truth and practicability of what I am going to say to you to-day.

If you will develop your markets by proper advertising, by business shrewdness, by the careful follow-up methods, and by the employment of energetic salesmen, such as successful business men do the world over, then and only then will there be peace and plenty in the prune districts of the valley of the Santa Clara.

Instead of you having to seek the buyer and beg him to buy your goods—to be put off and jollied with, to have your crops rejected until you lose all faith in human nature—if you will advertise, and advertise right, you may enjoy the comforts of your cosy sitting-room, and smoke your good cigars, while you send word to the buyers standing in line out in your front yard that you are really too busy to talk business with them to-day.

You get the worst of it, Mr. Farmer, you always have. You bring eggs to market and ask the grocer what he pays, and when he names the price he will pay you for your product you turn the other cheek toward him and ask him what is the price of sugar. You don't have anything to say about your business nor his.

There is no greater business force in the world than advertising. The force of advertising bears the same relationship to business that electricity does to mechanics, and both are in about the same state of development.

Advertising has made more merchants and more manufacturers successful than any other power. Advertising has made them free and independent, because it has created a demand for an identified brand and trademark. He has appealed to the consumer, and the consumer has responded with his good will and trade. Ladies and gentlemen, I think it safe to say that seventy-five per cent of the things you spend your money for are advertised in some shape or form.

When a manufacturer erects a big factory and gets his equipment in producing condition and he is ready to sell his goods, do you think that he calls all of his fellow manufacturers together in a convention and resolves to do business? Not much.

He sends for the advertising man, and this is about what he says to him, "I'm making Ivory soap, and I am making it a little bit better than any other soap is made, and I am putting better material into it, and I am making a finer looking package. It costs me three cents to turn it out and deliver, and I want to get ten cents for it. Turn yourself loose in the factory, and give me a report on what you think can be done, and how much advertising will it require for the next five years. I don't expect to make a dollar before then."

After the advertising man had made a careful study of the business and submitted a report on the advertisable points, he plans his campaign and outlines in detail what is necessary for him to do, and what it will cost to do it, and he takes it back to the manufacturer—and manufacturers of that caliber generally say yes or no right then and there. Such men think nothing of spending half a million dollars a year, which is charged up to the original investment and factory equipment.

The right to use the word "Royal" on a can of baking powder is valued at $20,000,000 to-day.

For $5,000,000 you could not purchase the right, and the right only, to put up a soap and label it "Sapolio."

These are but two illustrations of the value of a trademark—an advertised name—an asset which exists wholly in good will.

Gentlemen, I tell you these things to make you ponder over the wonderful possibilities of advertising.

Now, to go back to our soap manufacturer. Let us sit in his office for awhile and watch him work—and the half million dollars' worth of advertising is placed in the newspapers and magazines, in the street cars and on the billboards, and a corps of energetic salesmen go forth over the land visiting the retailers, wholesalers, and jobbers. The advertising has gone before them and has yielded its influence on the dealer, and the salesman not only loads him up with goods, but fills him with enthusiasm, until the dealer echoes the manufacturer's sentiments about Ivory soap, and Ivory soap sells, and advertising pays, and there is the brief story of success—easily told, but full of work. My goodness! gentlemen, you don't realize how much work is involved in such a campaign—and the worry and sleepless nights and endless annoyances, but all a part of success.

I'm not much on statistics, but I want to give you something to think about, and when you are on your homeward journey to-morrow, with nothing to bother you, think this over.

A few months ago, Mr. Hearst's New York "Journal" came out editorially and stated that the fruit-growers of California were greatly depressed owing to no outlet for their fruit, and asked the readers of that paper to buy these dried fruit products and thereby stop the falling market.

Seigel & Cooper, the biggest department store in New York, constantly alert to every trade-bringing opportunity, put prunes and raisins on sale at the cost price, and sold 13,000 one-pound packages in a single day. What do you think of that? Thirteen thousand pounds in one day! How is that for creating a demand!

But listen, shortly afterwards the San Francisco "Examiner" published similar editorials, and Weinstock & Lubin, S. N. Wood & Co., and others, put on special sales and sold 200,000 pounds in two weeks.

You know what I said awhile ago about apathy. Here it is again. The advertising manager of S. N. Wood & Co. is Mr. Rollin Ayers, one of those broad-minded, enthusiastic, right-idea sort of fellows—I wish he were here to talk to you to-day. Well, Mr. Ayers was red hot on the trail of the prune excitement, and he fell into line with the "Examiner" editorial, but he wanted to go the full limit and really help the grower by buying his prunes direct from the Santa Clara Valley instead of from the San Francisco brokers, so he telephoned down here to one of your leading prune-growers; he told him of the excitement in San Francisco and endeavored to impress upon him that the public were "prune crazy" for a few days and that that was the time to take advantage of public opinion and make a ten-strike for the prune-grower. This leading grower 'phoned back that he could supply him with eighty pound-boxes of prunes in thirty days. So Mr. Ayers telephoned to several other dealers and packers down here in the valley, and finally became so discouraged that he went to the brokers and bought all the prunes that he needed. Seventy-five per cent of the people who bought prunes from S. N. Wood & Co. had never bought them before, and all of them asked for a book of recipes, as they didn't know how to cook them after they bought them. So Mr. Ayers tried again. He spent a few more hard-earned dollars telephoning to growers and packers for recipe books, but the growers seemed to be interested in something else besides the prune industry at that time, consequently the prune-buyers of San Francisco had to eat their prunes raw if they were not fortunate enough to find some one who knew how to cook them.

These dealers, who put on these special sales with only one reason in the world, and that to help the grower, received no thanks for their pains. Even the broker raised the price as soon as there was any stimulated demand, and the enthusiasm died out, and now only the moral remains.

I don't advocate the selling of prunes at cost by all sorts of dealers as a regular thing. As introductory advertising it was all right, but what I want to point out to you are these figures:

The total sale of prunes in the United States last year, as near as I can learn, averaged about two pounds per capita for our entire population. The sale of beer averaged about one barrel per capita. Sugar and coffee run to about 100 pounds per capita. With a little advertising and extra stimulation, 200,000 pounds of prunes were sold to San Francisco's 400,000 population in less than two weeks. Now, if you will take a little mathematical exercise with me, we will readily calculate that it figures down to 26 pounds per capita per year, or more than thirteen times what you are selling under your present coöperative methods. If you will multiply this by the total population, and carry it out to its logical conclusion, you have a consumption of over one billion pounds per year, or about seven times more than you can produce if you work overtime.

Gentlemen, there is a way to go about this proposition that is simple and easy for you, but requiring a vast amount of detail for some one else. But details can be purchased and good men of sound business sense are available, and if you want to actually coöperate, go down in your pockets and put up your money to form a duly organized, legally perfected incorporation for the purpose of growing, processing, packing, selling, and advertising prunes—put your private fortunes to the stake. You know what James Graham, Earl of Montrose, says:

"He either fears his fate too much,
Or his deserts are small,
Who dares not put it to the touch
To gain or lose it all."

When you will do this, you can reasonably expect capital to give you a hearing; and when you can lay aside personal prejudices, and disregard the methods of the politician, and employ the best manager money can secure, with full power to act, and you will promise yourselves that you will pack under an attractive label and carton the choicest prunes raised in your valley, and advertise them all over the country in connection with a distinct and proper trademark, and you will make up your mind to send the best salesmen you can get to go over the country selling to dealers, showing hotel chefs how to cook prunes and arranging for demonstrations—when you can give such business as this the same business-like attention that successful business men give their business, then you will have a right to ask for dividends. And as soon as you do this there will be many more brands advertised by more companies which will spring into existence, and there will be a fight for the business, but you will be the leaders, and if you start now your pioneer brand will be established and in demand, and the other fellow will have to fight twice as hard as you for the business he gets, and while all this is going on, the price of prunes will steadily go up and keep on going up, and then there will settle down over this beautiful valley a supreme satisfaction that can be best expressed by the ready-money smile on the countenances of your prune-growers.

Before I close, gentlemen, I want to say that I have not attempted to outline in detail to-day an advertising campaign. There are thousands of ways and means to successfully advertise prunes, all of which can be carefully laid out for due consideration when you are ready to go ahead. In the meantime, you have the opportunity, the greatest business opportunity for money-making on a large scale that has ever been presented in these parts. Not only is it an opportunity for money-making, but it is absolutely necessary if you would save your industry.

Gentlemen, I thank you.

BEST METHODS OF ADVERTISING CALIFORNIA.

By E. W. HAZEN, of PHILADELPHIA, PA.

The following suggestions as to what can be done to make the production of fruit in California profitable are given after a careful investigation and study of the conditions existing at the present time. One solid month of time has been spent in different sections of the State interviewing a large number of your most intelligent and progressive growers and packers.

Primarily your troubles arise from the fact that your products have no identity in the eyes of the public. Some of your fruits reach the consumer with no individual package or trademark, while others reach the consumer in packages with a multiplicity of trademarks—the second class being nearly as bad as the first.

I fear your efforts to improve conditions have been misdirected. No improvement can be hoped for unless the effort is directed at the market end.

With nearly ninety millions of people in this country, and other markets in your reach, it is absurd to talk about overproduction. The United States alone will take many times your present production in California fruits of all kinds, if the market is properly developed, but this development must be done by systematic, intelligent advertising and business management.

You must absolutely look for relief by *developing the market*, and this can be done only by going to the *consumer*. It is unnecessary, of course, to say that the coöperation of the retailer and wholesaler is very desirable, but the *consumer* is all important.

If the people are with you, no one can block your way. What can be done when you have the people with you was very emphatically demonstrated by the election on November 8th. President Roosevelt was a well-advertised man, and the people were with him. The attitude of capitalists and trusts had apparently but very little effect.

Hence the solution of your difficulties must be secured by directing your attention to the market. Secure control of the market and everything else will be easily regulated.

Why has Baker's Chocolate been such a large success? Why do Procter & Gamble make one sixth of all the soap used in this country? Consider what has been achieved by the Cream of Wheat Company, Sorosis Shoe Company, Oldsmobile Company, N. K. Fairbank Company with Gold-Dust, Fairy Soap and Cottolene, Royal Baking Powder Company, and many others. All of these were successful because they gave their attention to securing the market in a systematic and intelligent way. They each give to the public a first-class article, and identify their goods by some well-known trademark.

When I mention Baker's Chocolate, you think of the Chocolate Girl; Procter & Gamble, you at once think of Ivory Soap; Cream of Wheat suggests the Colored Chef; Gold-Dust, the Gold-Dust Twins, and so on. All of these products were vastly more difficult to handle and market profitably than fruit, because of the sharpness of competition with which they had to contend.

It has been demonstrated over and over again that if you have the people with you, every one else must fall into line—the retailer, the wholesaler, and the broker.

You must, however, sell only good fruit and in first-class condition, always bearing in mind that the market is more valuable than the price that you can get for a little poor fruit.

You must have an individual package, and a distinctive trademark, and see to it most scrupulously that the package and the trademark are identified with quality.

There is no question but that package goods appeal to the women. Tell me why candy is packed in packages and sells for more than the same goods in bulk?

It is a demonstrated fact that the housewife discriminates in favor of package goods against those in bulk, especially if advertised. She has learned by experience that advertised package goods, identified by a trademark, are reliable and of superior quality. Otherwise it would not pay to advertise them.

I understand that in New York State a movement has been started recently for putting up dried apples in cartons, with a trademark; and there is no question that if they put up a good article, advertise and manage the business intelligently, it will be a marked success, notwithstanding the fact that any farmer's wife can dry her own apples, and most people can secure the fresh fruit at any time.

Take prunes as an illustration. What may be done by advertising a brand of prunes in from one- to five-pound cartons, is clearly shown by precedent in other lines. This form of handling the product makes it possible to hold trade against the fiercest kind of competition.

There are, however, other important conditions besides the method of packing which must be met in order to insure success.

First, you must have a business organization, a permanently incorporated body, which will establish an efficient business management, with power to plan a definite selling campaign, as well as to control the methods of packing. One central, efficient and permanent business management is indispensable to large and continuous success.

A first-class sales manager must be secured—the best man possible, no matter what the cost. Give the wholesaler a fair profit and the retailer a reasonable margin; establish the retail price yourself, marking it plainly on the package.

Grade your fruit by a system that means something to the consumer. Pack only two sizes, and the purchaser will know there *is* a difference in size, and *why* there is a difference in price.

You probably know that the consumer does not get her prunes any cheaper from year to year by variation in the price which you receive; the size of the crop apparently does not affect the retail price; the broker, wholesaler, and retailer reap all the benefits.

The grower and packer are entirely out of the reckoning in selling, and simply take what they can get.

Under the package and trademark plan, with proper selling machinery, you will be able to dictate your own prices and run your own business. It is undoubtedly true that there will be many difficulties to overcome. So there are in every line of business, otherwise anybody could conduct a successful business. All that is needed is a determination to solve the problems and to study them intelligently. This applies to both the packing and selling ends. The solution of the difficulties to be met justifies the best ability you can employ.

Suppose you should organize and incorporate a new company, with a capitalization of, say $2,000,000; include in the company all packers or growers who desire to come in; this will enable you to utilize the packing-houses already established, and save a large loss in valuable property.

Elect the best man you can find as a general manager, at whatever salary may be necessary to secure his services. Hire a first-class sales manager, the best you can find. Give these men power to run the business under a general policy, decided by a board of directors and officers.

Select a good trademark, one easily remembered and appropriate. Pack all your good-quality fruit in cartons marked with this trademark, also a mark indicating the quality and retail price. The word "California" should appear prominently on every carton.

Abolish the present system of grading, which means nothing to the consumer. Make, say, two grades: Fancy Prunes and Fine Prunes, or some such distinction.

Pack in cartons none of the very smallest and inferior prunes, which may be used instead for by-products, or sold in bulk for the cheap trade—boarding-house prunes.

If it is impracticable to pack all the fruit at once, because of sugaring, you may pack from time to time, as needed. This will make the packing season more permanent, require less help and less machinery, and be more economical.

Efficient machinery can be easily secured to pack prunes in cartons; if such machinery is not now being manufactured, it will not be difficult to have it made.

All abuses now prevalent in handling fruit must be abolished, and the greatest care exercised to give the consumer a satisfactory article, so that you may elevate the trade, getting members of the better class of homes to eat prunes.

Make an advertising appropriation of one tenth of a cent per pound, based on the previous year's crop. This would afford an appropriation for 1905 of about $150,000, of which $100,000 should be used in the magazines for a permanent campaign; the balance may be used in newspapers and other ways locally where it is necessary to stimulate local trade temporarily. Many times the retail man is very much influenced by a little money spent in his immediate neighborhood, in addition to the magazine campaign; many times he will pay half of the expense himself, and in many other cases will pay the entire expense, provided you furnish him with electrotypes.

The advertising campaign must be conducted along educational lines, together with large display of the package and trademark, impressing on the public mind that this trademark guarantees quality and cleanliness always. Considerable of the balance of the advertising appropriation may be wisely expended in literature of one kind and another, which will be auxiliary to the general campaign.

Now, with reference to the details for selling the goods: There will be no serious opposition to the carton on the part of the jobber or retailer, if they know the character and magnitude of the campaign you contemplate. They will recognize the fact that they must get into line.

Deal with the jobber, or wholesaler, if he will give you satisfactory service. If he will not work with you—which is altogether improbable—I would suggest the following line of action:

Under present conditions, the packer has this year paid the growers an average of less than 2 cents per pound, some as low as 1 cent. The packer figures ¼ cent per pound for his services, the railroad takes 1 cent for freight, and the broker, jobber, and retailer take the balance. A total of 2¼ cents per pound remains in California.

From the information I am able to secure, I judge the average retail price is about 10 cents. If you sell all this year's crop, which I understand is about 150,000,000 pounds, you will keep nearly $3,575,000 in California, and the broker, jobber, and dealer will get about $11,000,000.

Supposing the new company were to pay the grower 3 cents, take 1 cent for packing and handling here, 1 cent for freight; establish distributing stations under your own control in New York, Boston, Philadelphia, Chicago, St. Louis, St. Paul, Cleveland, and Denver; ship your product in carload lots to these points, and distribute direct to the retailer.

Allow $\frac{9}{10}$ cent per pound for the maintenance of these stations and salesmen who shall drum their respective territory. This would provide $168,750 for each station, which I believe is more than is necessary for the purpose.

You can allow the retail merchant 3 cents per pound, which would be twenty-five per cent of the retail price; he is generally satisfied with twenty. You can sell the "extra prunes" at 18 cents, and "fine prunes" at 10 cents—an average, say, of about 12 cents per pound for the entire output.

Supposing these figures to be accurate and practicable, the grower would receive 3 cents, packer 1 cent, freight 1 cent, the stations $\frac{9}{10}$ cent, dealers 3 cents, and advertising $\frac{1}{10}$ cent; a total of 9 cents.

With an average selling price of 12 cents, this would show a margin of 3 cents per pound, representing $4,500,000, which would be ample to meet any other expenses, or any variations in these estimates, and a good balance to the stockholders of this organization in the form of dividends. Three cents to growers, 1 cent for packing, with 3 cents profit, would mean 7 cents per pound for California, or $10,500,000, against less than $3,000,000 as now handled. These figures mean not only prosperity to the corporation who operate, but prosperity for all California, especially the territory where the prunes are grown.

These figures are not accurate, but you may rest assured that if the average sale under the present conditions is 10 cents per pound, 12 cents can easily be secured under the better conditions as outlined.

In addition to this, you will also establish the business on a firm basis, and will be able to double and quadruple your sales if the production is sufficient, and at the same time maintain your prices. The greater the magnitude of business, the smaller the cost of handling each pound; therefore, the greater the profit, the special gain being in the distributing expense. At the same time, you would be building up through this organization and your advertising campaign, a most valuable asset called good-will, a very tangible asset recognized by all merchants.

Should you operate through the wholesalers, the $\frac{9}{10}$ cent per pound allowed for distributing centers would be more than ample for their profit. It might be found desirable to combine the two methods—establishing your own distributing centers in some localities, and operating through the wholesale dealers in others.

This organization would be equipped to handle other dried fruits, such as apricots, economically and profitably; the same selling organization could also be utilized with economy for distributing and marketing these products, which must, however, be subject to the same conditions as outlined for prunes; they must be packed in cartons, with the trademark, and advertised by the same general plan.

The marketing of prunes, by appealing to the consumer, is the only permanently satisfactory solution to your difficulties. I am absolutely confident that such a plan as I have outlined is entirely practicable, and will work out in a manner satisfactory to all concerned. I would be willing to stake my reputation as an advertising man, which is the most valuable asset I possess, on the success of a prune-advertising campaign, if conducted along proper lines, and in connection with a good business management and selling organization.

It is absolutely indispensable that prunes shall reach the consumer in their original package: First, because it must be possible for the consumer to know that she is getting the good article that you advertise; second, to remove the ground for her present prejudice, and lift the product to a higher plane in her mind; third, to prevent manipulation by the retailer; fourth, to make the distinction clean cut between inferior prunes and a selected article.

I understand that this year the grower of raisins received about 1¼ cents per pound; the packer takes 1¾ cents, and the consumer pays from 12 to 15 cents per pound; a difference of from 9 to 12 cents per pound. Evidently a large profit goes to the wholesaler or retailer, or to both.

If the crop this year is, say, only 100,000,000 pounds, California gets $3,000,000, while from $9,000,000 to $12,000,000 goes elsewhere.

What has been said about prunes is to a large extent true of raisins. It is possible to influence and educate the public so that they will demand only seeded or seedless raisins. It is well known to the trade that seedless raisins are grown, and seeded raisins are very generally found in market, yet I am sure that there are many housewives who do not even know that seeded and seedless raisins may be purchased.

There are countless brands of package raisins on the market, yet none are known to the consumer and asked for.

The consumption of raisins is not capable of the expansion possible with prunes, but it might easily be doubled, or quadrupled, by proper educational advertising.

There should be one well-advertised brand, and standard prices. It may be impossible to secure coöperative action, but one concern controlling from sixty to seventy per cent of the present output can make a strong bid for the trade, and develop it to a point where they would control the market.

Oranges and fresh fruits are not so easily handled, because they are perishable, but the same principles apply. Many thousands of people East do not eat oranges, because they find it difficult to get satisfactory fruit. The people of this country would eat all the oranges California can produce, if they had some practical way of knowing that they would get what they order and pay for.

In the first place, it is a great mistake to send green fruit to market simply to get there early. It kills off more trade than you realize. It is not practicable to handle all fruit under one brand, because there is such a wide variation in quality in different localities. Each section—

Riverside, Redlands, and others—should establish a brand for its own locality, and then see to it that the brand stands for quality with the consumer.

It is certainly not good business judgment to ship a perishable fruit to market before you have even a prospective purchaser. It is better to lose the fruit at home than to owe the railroad when the season is over.

Oranges and other fresh fruits should be distributed by the grocer, and not by the fruit stand or vender. The housewife will order from the grocer without even seeing the fruit, if she knows that a package may be secured with a mark on it which guarantees quality every time. You could then sell all your fruit before shipment, and know that you would receive remunerative prices. This can be certainly and easily demonstrated, and I believe will be in the near future.

Oranges may be packed in boxes, or baskets, holding from one to three dozen, and marked with a good trademark. These, if properly advertised, will sell through the grocer with great satisfaction to the purchaser and the grocer, and profit to the grower. A popular package would be from 18 to 24 oranges.

Such a plan would result in large increase in consumption, not only because of the knowledge that reliable fruit can be obtained, and in attractive, convenient form, but also because more fruit will be purchased at one time. You know a good supply encourages consumption in most cases. This will be popular, not only with the consumer, but with the grocer, because it will encourage trade with him instead of with the fruit vender or stand, and because it is easy to handle and avoids shrinkage.

This plan will also encourage regular instead of spasmodic consumption, because the grocer's clerk makes regular calls, and has only to take the order.

This plan will also operate so that the fruit will be ordered in advance, and the distribution can be easily regulated with great economy and profit.

This general plan applies equally to pears, peaches, grapes, etc. But all finally depends upon advertising to interest the consumer, and show her where, how, and why she can get what she desires.

This calls for distributing stations and good management, but puts the business on a permanently profitable basis.

INCREASING THE DEMAND FOR CALIFORNIA CURED FRUIT PRODUCTS BY ADVERTISING.

By H. P. STABLER, of Yuba City.

This is the age of advertising. All lines of business in this country, except the fruit industry, recognize that successful competition is impossible without resorting to publicity. At the outset, the writer would lay down the proposition that all of the ills now confronting the California fruit-grower would be remedied if the consumption of our fruit products were doubled.

Fruit-growers of this State have demonstrated to the world that their methods of production can not be surpassed, and they have displayed an intelligence and energy which, to people in older communities, is little less than marvelous. In fact, we have stimulated production to that point when our warehouses are overflowing, and for several years our brightest minds have been devising ways and means for relieving these unfortunate conditions. For many years, enterprising and energetic citizens of this State have spent much time in the solution of this problem, and with one accord have agreed that a thorough coöperation would be the desired solution. In many instances, notably in the Santa Clara Valley, the effort at coöperation has been demonstrated to be a success. But the very fact that fruit is grown ever such an expansive area of the State, and our cosmopolitan population, has made it impossible, in the opinion of the writer, to ever place a sufficient percentage of our products on the market through coöperation. In theory, the coöperative idea can not be assailed; but the experience of the past fifteen years has demonstrated to many of us that coöperation is an iridescent dream, that it will never obtain in the horticultural industry of California.

Even with every pound of our cured fruit products in the State handled on the coöperative plan, something more would have to be done to increase the consumption of our products. All manufacturers and producers, other than fruit-growers, realize that the broker, jobber, and dealer, while important in the distribution of our products, are not the factors to be cultivated as much as is the consumer. Fruit-growers must realize that the consumer must be told of the merit and value of our products, and furthermore, how to prepare them for the table. An up-to-date campaign of advertising, appealing directly to the consumer of this country, would, if properly conducted, so stimulate the consumption of coast products that our orchards and vineyards would be taxed to supply the demand. This statement is true both in theory and in practice. How many carloads of Postum Cereal would be used in this country if the manufacturer had depended on controlling his product, and waiting for the jobber to come to his warehouse and buy the goods? How many carloads of these cereal products would the retailer use in the course of the year, if his customers were not educated up to the point of asking for the goods over the counters of the retailer? These products are shipped not only in carloads, but in trainloads, and are found in great multiplicity on the shelves of every retail grocer in the United States. But the manufacturer, through his advertising, has brought the consumer to the retailer, and has made it profitable for the retailer to carry these products. I ask any member of this Convention, or any citizen of this State, to show me that an intelligent advertising campaign will not result in an increased consumption. It has been argued that this effort would not be successful until the products of the State were under one immediate control, and while I will admit freely that this would be desirable, our experience has proved it to be an impossibility; so I ask, why should we neglect to take advantage of existing conditions, while waiting for the development of an impossibility?

It is not my intention, at this time, to anticipate all the minor details of a campaign of advertising, because I feel it would be a waste of time at this stage of the proceedings. Undoubtedly many obstacles will have to be overcome before a general educational campaign of advertising of our products can be arranged in this country; but if the fruit-growers of California will give up striving for the impossible, and will adopt the methods of all progressive business men, and talk to the consumer about the merits of our products, more will be accomplished in the way of solving our difficulties than has resulted from this long campaign of inducing the grower to see the benefits of coöperation.

Some weeks ago a representative of the Babbit Company of New York called at the writer's home, and began to demonstrate the merits of the caustics made by that firm. He had sold a local dealer a carload of Babbit's Lye, and was then devoting a week's time to an educational campaign among the fruit-growers, asking them to use this product in their business. He was not depending on cutting the price to the dealer in order to make him buy the goods, but in endeavoring to effect his sale he contracted to spend several days in assisting the dealer to sell the goods. In reply to a question, he assured me that not only his own company, but that all concerns in the United States were striving, through advertising, to influence the consumers to use their products. If this is a good business proposition for the manufacturer of other products, what objection can any fruit-grower make to an attempt to influence the consumers of this country to eat more fruit?

A hundred thousand copies of a booklet entitled "Eat California Fruit" has just been issued by the Southern Pacific Railroad Company, and intended for distribution among the consumers in the Eastern

States. In the preparation of this booklet, the greatest difficulty was encountered to secure recipes for the preparation of most of our California cured fruit products. From an effort made in this valley some years ago, a hundred recipes were evolved for the preparation of the prune, but no literature was found covering the processing of other cured fruits for the table. An examination was made of fifteen standard cookery books, many of them written by cookery experts of national reputation, and the writer was astounded to find that twelve of these volumes made absolutely no mention of the preparation of cured fruits of any kind for the table. Two of these books contained less than one page each, devoted to cured fruits, while one volume seemed content to worry along by offering the reader one recipe for the preparation of the prune. This modest booklet published by the Railroad Company is to-day the most complete treatise on the preparation of cured fruits for the table.

The fruit-growers have been content to let the consumer go to the groceryman, purchase the fruit, which is usually kept in an unattractive form, and have made no effort to tell him of the merits of the goods. In no other line of business has this system been adopted; but on the contrary, vast sums of money are continually being expended in showing the consumer the advantages of various commodities, and making it easy for him to learn how to prepare them for his use. While we have been content to let the consumer discover our goods, manufacturers in all lines have for many years spent their energy and talent in talking to the consumer.

Advertising is an art. Many of the men engaged in it are making fortunes annually by exploiting articles of indifferent merit, which do not compare in merit with the products which we find ourselves unable to market at a price profitable to the grower. Men versed in the science of advertising, on investigating fruit conditions on the Pacific Coast are simply amazed at the indifference of the grower to the possibilities that exist in a proper exploitation of fruit products. Unless you have given some attention to this question, you will be amazed and astounded at the possibilities of advertising. It has developed the low-priced magazine of this country to an astonishing degree, and to laymen the prices charged for space in these publications is marvelous. The current issue of the Ladies' Home Journal, a periodical with a circulation of 1,000,000 copies a month, carries an advertising patronage in the Christmas number of $144,000. Seven full-page advertisements are published in the December issue, at the cost to the advertiser of $4,000 a page for one issue. Remember this money is spent by business firms, not from any sentimental point of view, but because business wisdom has taught them that their investments in publicity are not only necessary, but are more profitable than any expenditure they can make. Will you give me one valid reason why our own industry would not be equally benefited by adopting the methods resorted to by the best known firms in this country?

If I were to tell this audience a narrative which had for its central figure the taking of a photograph, and would pretend to forget the word of the instrument used in taking pictures, no doubt more than half of you would immediately respond from your seats the word "kodak," and yet the word you should supply is the word "camera"; but by the expenditure of hundreds of thousands of dollars the Eastman Company of Rochester, New York, has made the American people associate the word "kodak" with "camera." This is the acme of advertising, and has resulted in making millions of dollars for the firm manufacturing this instrument. But to come nearer home, to the people of the Santa Clara Valley, were I to tell you that after the escape of some bandits, the Sheriff succeeded in capturing them when covering them with Winchesters, there is not a man, woman, or child in this audience, or in the State of California, or in this entire country, who would not recognize at once that the word "Winchesters" means "rifles." This is a word familiar to all of you. You all know people by the name of Winchester, and there are counties and towns in these United States by that name, but by an intelligent campaign of advertising, with a liberal expenditure of money, the American people associate the word "Winchester" with rifle. If you do not think the effort has been a successful one, I would simply ask you to drive a few miles out of the city of San José and see there one of the finest suburban homes in California, which is owned by members of the Winchester family. Millions of dollars have been made by the manufacturers of this firearm, because by their clever publicity they have developed the association of ideas, as it is called in advertising, and made us appreciate that the word "Winchester" means rifle.

I could give you many more illustrations as remarkable as these, and I would like to have the time to so thoroughly impress you with the idea that a proper advertising of our products with the consumer would result in so increasing the demand for our products that you would one and all, before leaving this meeting, resolve to start a movement that would result in securing a fund for this purpose.

In closing, I would like to ask this Convention to at least appoint a strong committee of eleven, with power to act, to set in motion the machinery which will raise the funds and engage in a publicity of our fruits. This question appeals to all citizens of California, and I would ask that when the committee is appointed, it consist of representatives of the transcontinental railroads, the packers, and the fruit-growers of the State.

REPORT OF THE ADVERTISING COMMITTEE.

By H. P. STABLER, Chairman.

To the Chairman and Members of the Fruit-Growers' Convention:

Gentlemen: At the Convention held in Fresno a year ago, a committee of fifteen was appointed to consider a plan of coöperation for marketing our fruit products.

At a session of this committee held in San Francisco last spring, a sub-committee of three was appointed on advertising, to outline and put into operation a plan of increasing the consumption of cured fruit produced in this State. This committee consisted of H. P. Stabler of Yuba City, chairman, Arthur R. Briggs, and A. L. McCray of Fresno.

For several weeks this committee endeavored, through coöperation with shippers, to secure the necessary funds. They were asked to arrange for a fund of 25 cents on each ton of fruit shipped East, this amount to be paid to the railroad companies at the time of shipment. The railroad companies were to act as receivers and custodians, until the money was expended through the advertising committee. Though it involved some expense and much labor, the railroads agreed to take care of their part of the plan without cost. For good and sufficient reasons offered us by many shippers, the plan was decided to be impracticable, and then, after discussion, your committee decided to call related interests to its aid by enlarging the committee.

The new committee was named the California Fruit-Growers and Shippers' Advertising Committee. On this committee we appointed Mr. E. O. McCormick, Assistant Traffic Director of the Harriman System, chairman; Mr. W. A. Bissell, Assistant Traffic Manager of the Santa Fé Route; Mr. George N. Armsby of the J. K. Armsby Co., Col. Philo Hersey of the Santa Clara County Fruit Exchange, Mr. D. J. Guggenheim of Guggenheim & Co., Mr. W. P. Lyon of the Edenvale Fruit Co., Mr. A. Rosenberg of Rosenberg Brothers & Co., and Mr. L. F. Graham of the J. H. Flickinger Company. To these were added the three members of the original committee.

Before the creation of the larger committee, your original committee had decided to ask the assistance of the railroads in collecting any advertising tax decided upon, because in no other way did a feasible plan occur to us whereby the fruit advertised would be equitably assessed for such advertising.

After many meetings, a plan was suggested whereby to raise one dollar advertising tax per ton of cured fruit shipped from California to points in the East, taking the so-called postage stamp or higher freight rates. Absolutely no expense for salaries or collections was involved in this plan. The California State Board of Trade generously offered the

committee the use of its offices in the Ferry Building, San Francisco, its stenographers, stationery, postage, printing, and telephone service. The railroads agreed, if the plan became operative, to collect and account for the same without any expense. The members of the committee, in their endeavors to make the plan a success, had absolutely no expense which could come out of the fund collected. Altogether, in securing the collection of a maximum amount at a minimum expense, with absolutely equitable assessment, the plan proposed could not be bettered.

It was proposed, in carrying out this plan, that the committee should own a copyrighted trademark, which would be used in all advertising done. To use this trademark any packer of cured fruits would have to maintain a high standard under such supervision as might be found necessary, or otherwise forfeit the privilege, which would be a valuable one, inasmuch as its advertisement would create a demand for the fruit associated therewith.

After careful investigation of the results of the wide advertising done by cereal food companies, and other industries, your committee unqualifiedly concluded that advertising of properly cured and packed California fruit, preferably in packages that could be taken into the home, would result in an immense increase in the consumption of our fruit at much higher prices to the producers.

Unfortunately, certain objections have arisen to the execution of the plan for collection of the tax as proposed, and until these are settled your committee can not report that the plan is in a progressive state. In the meantime the various members are striving hard to develop new plans which they hope will result in securing the desired funds.

MR. SPRAGUE. As chairman of the committee of fifteen, will say that we regarded the matter of advertising of so much importance that we created a special committee, and mark you, gave them power to act without reporting back. This shows the confidence we had extended to that special committee. In the report of the committee which was made to this Convention, this matter of advertising was specially investigated as one of the objects to be accomplished by the coöperative or profit-sharing plan.

MR. STABLER. I would not reflect upon Mr. Sprague at all. I was simply trying to show that in the marketing of our products and the question of getting them to the consumer, my friend Mr. Sprague was quite content to say nothing about advertising. That was the point I was trying to make. I will say further, in proof of what I have said, that in all of Mr. Sprague's discussion during the past four days, he talked upon all questions but the question of getting our goods to the consumer, which means advertising. That is the point I am trying to make. When the fruit-growers of this State see that in order to make our products profitable we must tell the consumer about them, then we shall advertise.

PRESIDENT COOPER. I have been requested to call for Mr. Freeman, as he has just returned from Europe.

ADDRESS BY MR. FREEMAN.

Mr. Chairman, and Members of the California Fruit-Growers' Convention: I do not know that I can say anything of interest to you. You have had a long day of it. I have listened to everything that has been said from the desk and from the floor, and have been very much interested, and I think it is all good. I want especially to comment on Mr. Stabler's talk. I think his ideas are splendid.

Now in regard to Europe. I don't see what we can do without the European trade. For the last three or four years the prune industry has not been very successful, but it has been very much more successful because we have had the European trade. The reason is because of the failure of the crops of the Mediterranean countries. I have eaten prunes in the various places where I have been, and they charge from 10 to 50 cents a dish, the prices at the fancy hotels being that high. They were well served, rather better served in the cheap places than in the dear.

There is an item of interest to us all in regard to prunes that perhaps is not thoroughly understood in this country. The French prunes were originally largely eaten from the hand. We often hear people say, "I don't care for California prunes. I don't like to eat them from the hand; they don't make a good confection." Now the truth is, French prunes are produced along the northern shores of the Mediterranean Sea, in a country that has a heavy rainfall in the autumn. There is not a pound of those prunes dried in the sun to completion. Sometimes curing is started in the sun, but never finished. They are dried in ovens. The prunes are all thoroughly cooked when they are dried. Years ago those in the prune business on the Danube, in Austria, Hungary, and Servia, found out that they cooked them in France, and they did the same thing. So now nearly every pound of prunes that is packed in Europe is cooked twice and is quite ready for consumption when it is offered for sale by the retailer.

Now I have heard, I believe, a little something about marketing our prunes as they come from the field, and I want to tell you, ladies and gentlemen, that no greater mistake can be made than to do it, and one of the reasons why our prunes are not thought so well of in America, where we produce them, as in Europe, where we have got to fight for a market, is that we market them without cooking them. Generally speaking, people do not know how to prepare prunes to eat them.

Some take them direct from the field; they should be cooked; processing is not enough. It would pay if the prune producers of the State would arrange to cook them by a dry heat to a far greater extent than is now done. And if you would do that you would have more trade in America; and if you would refuse to sell a single pound until it has been put through steam or heat for the longest time it will possibly stand and then dry it, I am sure as can be that you will have more trade. Now these statements are correct as to the European article; it is not only cooked, but cooked twice.

I went East and spent seven months in Europe to sell California dried and canned goods. In England I heard that our prunes were not as good as those produced in Europe; that was a fact. And they are not as good as those produced in France. Those were the statements I heard all the time I was over there. "Your prunes are not as good as those we buy from France." I am confident that if our prunes were cooked more, and not presented to the consumer in a less cooked state than those of Europe, we would sell much more. The European people are very economical. They work in the iron and steel mills, cotton factories, mines, and all kinds of factories, and they get a very low wage, about one third or one fourth of the wage of the same operative in America, and so they have much less to spend for a living; and anything that is sold to those people as a food product must have merit—must be a No. 1 article from the standpoint of health and every standpoint. They look at our prunes and all our products from that standpoint, and also from the standpoint of the amount of money they have to spend for their daily bread. Now, we can not market our prunes there in a large way unless we do so at a low price. When the European crops are small—and I am glad to say they have been small for several years—we have a chance to sell and take advantage of the market; that is when we take advantage of their small crops, and I think we get a pretty fair price for our prunes. Now here, in some parts of the country, we had the heaviest fruit crops this last year that we ever did, and some of the European countries also had the heaviest they ever had. California was short. But our position is not dominating enough so that our shortage would enable us to get a reasonable price for our products. We had to face this tremendous crop in Europe for the first time in ten years, if not in the whole history of the country. They produced something like a hundred million pounds of prunes in Europe, and it seems as though we have done very well to make as large a profit on our product as we have this year.

We are at a great disadvantage in freight. On their railroads they charge less than they do here in this country. Here we have to pay a cent and a quarter a pound gross to get our prunes and other dried fruits to the European market—that is the average price—while the

French and Austrian and Hungarian people only pay an average of a quarter of a cent a pound. That is a big thing to overcome. We have our labor—and I don't want to see the wage rate get any less than it is—we have our labor at three or four times the price of European labor. But we have the Yankee ingenuity, or the American ingenuity, to help us. But with all this we are able, actually able, paying higher prices for labor, paying interest on the money invested in machinery—we are able to put up our prunes at an actual cost as cheap as the French, Austrian, or Hungarian people do, and get their green fruit for nothing. Some think their labor is cheap, but they use up a tremendous amount of it. They are economical in everything but the amount of labor they use; they throw that away.

The German people are comparatively small producers of fruit and large consumers. The agrarian party in Germany has endeavored for many years past to restrict the importation of food products that can be produced in Germany, and through the efforts of that party laws have been passed and rules made about the importation, among other things, of our dried fruits. They first passed laws in regard to the San José scale, the idea being that the dried fruits we have sent over there contained San José scale that would help to infest their orchards. Perhaps the idea was a good one. Perhaps if we had used as much care in the past we would have less of these pests. But they actually had officers, who did not know the difference between the San José scale and a June bug, condemn thousands of dollars' worth of peaches, pears, and apricots for having San José scale that I don't suppose there was ever a San José scale within a mile of.

Now in regard to sulphuric acid. There is a law in Germany that apricots, pears, and peaches containing over 0.0125 per cent of sulphuric acid can not be sold. In spite of this law, people connected with educational institutions in Germany investigated the matter at their own expense and found that 0.0251, or about a quarter of one per cent, or even much more than that, of sulphuric acid in apricots, pears, and peaches was wholly without injury to persons.

There is something that this Convention can possibly be able to do. The time will soon come when the German government will ask our Government to formulate a new treaty, and when that time comes the duties on California dried fruits will be one of the main things to look after, and it will be an important thing in the treaty. The question of what restrictions they will place on the importation of our dried apricots and dried peaches will also have a place in that treaty, and I hope that when the time comes proper pressure will be brought to bear upon the people in Washington who have this matter in charge to enable our Government to give a fair show to the producers of fruit in California.

The Germans have placed such a high duty on imported canned fruits that the consumer can not afford to pay the price, and it is actually prohibitive. One of the greatest helps in California is the canning industry. In other words, if it were not for the fruit which we are able to dispose of to the canners, nothing like the amount of deciduous fruit produced here now could be raised. And England has for many years and is still ready and willing to pay a fair price for a very large amount of our finest grades of canned fruit. More than 700 cars in one year have been shipped to England from California, and the average is more than 500 cars per year—a great big trade. I will say this much for England: On account of being a small producer of fruit, that country is sure to be a good market for our fruits, dried and canned, for years to come. And we should closely look after our relations with that country in regard to the restrictions that may be made on the importation of fruit from this country.

We have been robbed for years by the railroad companies, and they gave us the most abominable service in the years 1902 and 1903 that was possible for a railroad company to give. They had all manner of excuses. They took a car of fruit from a shipping point in California and would be sixty days in landing it in a port in Europe. That was about the average. This year they have made a most complete reform. The schedules of the arrivals of cars that our people have been sending me lately show an average of thirty days, which is most excellent service, and we are to be congratulated that the railroad companies have finally come to know that unless they give us good time on our products, the grade of it will certainly retrograde.

Now, there is a point in Europe that I saw, which I think is of great interest to you prune-growers. I saw all over Europe prune-butter. I had heard about it before I went there. I looked into it to see what it meant. I found that they took a lot of our small prunes that we shipped over there in 1903, the carry-over prunes, and made them into prune-butter. I found that they would take a very large percentage, practically all, of the small prunes in France, Austria, and Hungary, and make them into prune-butter. They take the prunes and boil them, take out the pits by hand, then boil them down as we used to maple sugar in the East, adding a little sugar. Now I would be glad to do something in that line myself as a manufacturer. It would be a good thing for the farmers and fruit-growers who are here to-day, to see if some company can not be formed in San José or somewhere that will start a manufactory to make our small prunes into butter. It would be much better than putting your small prunes on the market, and your good-sized prunes would bring more.

I wish to say one word about the transportation of fruits. It seems to me that we are very much ahead of the European in this matter.

Of course they dry their prunes and don't let them go to waste; that is true also of their fresh fruits. Those that they do not sell fresh are dried and do not go to waste, unless they have a surplus. If they have a surplus they have no way to take care of it. And there is one advantage we have over all other fruit-producing countries, as we have a rainless season and can usually take care of our largest crops by drying them in the sun without artificial heat. And on account of that we are able to market our surplus, generally, at a small margin of profit to the producer, while in Europe thousands of tons in a prolific year go to waste. There they sell apples, pears, and sometimes grapes, which are produced all over England and on the continent of Europe, at one cent a pound in small handful lots from the retail stands. That was the ordinary price on a good stand. I thank you all very much.

DISCUSSION ON ADVERTISING.

DR. DINSMORE. There is one thing about this advertising I have thought about a great deal that is much confused by some people. Now this advertising of an article like prunes in newspapers and magazines and so on is an entirely different thing from that of advertising Ivory soap or Royal baking powder or Winchester rifles. It is not special enough. Now I think two or three years ago a gentleman came here from St. Louis and got $30,000 or $40,000 to advertise prunes. I would not say that there was absolutely no returns from that, but I never heard much. You might as well advertise oats or pork or anything else in the newspapers or magazines as to advertise prunes. You have got to specialize the ideas. The suggestions of Mr. Stabler I like better. You take all of these breakfast foods, as we now know them. When I was young we never heard of such a thing. Now we never see a breakfast table without mush. I suppose that most of the breakfast foods come from wheat or oats or some such staple article. Advertising prunes would be like advertising such staples. They advertise some special brand of breakfast food, and the purchaser knows he is getting some special variety, and for that reason he buys it.

You take the wife of a mechanic living in the East, the man earning say $3 a day, and she knows just how much she must spend for food. The woman goes into a grocery store to buy her supplies. Now, what will induce her to buy prunes? She has heard about prunes. Everybody knows about prunes, just as they know about beans or anything else. Now, the groceryman may keep his prunes in a back room with oats and hog-feed and such things; he comes back with a sack of prunes—I would not say California prunes—and he pours them out on the counter; or he may pull out a box from under the counter, and there are the prunes. May be they are processed, or they may be sugared, or look as though they were moldy; they are utterly uninviting. How much are they worth a pound? Well, they might vary: two pounds for a quarter, or 15 cents a pound. Well, she can't afford to buy them at that price. Suppose they were put up in neat one-pound packages, in an attractive manner, like one of these packages of breakfast food, or a a bottle of Heinz's pickles. Suppose they are put up in a one- or two-pound package, for 10 or 20 cents, so that the grower would realize 3 cents a pound for them. No reason in the world why he should not receive that much. The woman notices them and likes the appearance. She asks how much they are. "Why," she says, "I can afford to buy them at that price." She buys some and likes them; inside the package she finds a little pamphlet telling how to cook them.

Now it seems to me that this is the principal thing about this prune situation. The main point is the consumption. I don't think it makes a particle of difference whether they are carried on the cars of the railroad company or on a private car line, provided they are reasonably and expeditiously carried.

A groceryman in the East that I used to deal with—I went in there one day and I said to him, "I don't see any prunes here." I used to buy them myself for 22 cents a pound when I was there. They were put up then in nice little packages, and they cost a great deal more than they do now. "No," he said, "we are not carrying prunes very much any more." He had some in the back room. I went back in the other room, and there was a lot of hog-feed; they were all dirty and not fit to eat. I asked him what those prunes were worth. "Fifteen cents a pound." They were not fit for human beings to eat. You ought not to ship the small grades of prunes back there; the Easterner does not know the difference in the grades as we do here; to him a prune is a prune. If they can have good prunes at a reasonable price, put up in an attractive manner, they will buy them and lots of them, and you can not supply the demand. I am as sure of that as I am of anything, and until we do that we will have a glut at this end of the line. [Applause.]

MR. JAMES. I have been a grocer for something like thirty years in this city, and I guess I have retrograded a little. I am nothing but a prune-grower now. I have advertised for twenty years in this city. But when we advertise we must have something to advertise that is attractive. If you advertise Royal baking powder, that is something definite; if you advertise baking powder, that would not accomplish anything. Every old lady from Maine to California knows what prunes are. We can not advertise prunes. I would like to know the plan that this gentleman proposes to advertise these prunes. Now, take Ivory soap; that is a different thing. I believe in coöperation. If these prune-growers would coöperate, each in his own immediate neighborhood, and get together and put up the prune market, and then give them the money to advertise, it will be a success. But there is no use in charging these people a dollar a ton who only raise a carload of prunes; it will cost them something like $30 for advertising. If you go to work and stick an advertisement of prunes into a newspaper or magazine, it would not amount to anything. We want to know the plan of advertising. I believe in advertising thoroughly. The gentleman says it has brought many a merchant from the back alley to the front street. I think advertising will bring the prune-growers into the front ranks, but we want to know what we are going to advertise before we attempt anything of that kind.

A MEMBER. A number of us were in St. Louis for some time last summer, and two or three of us always ate at the same restaurant; probably thirty or forty Californians ate there; and there was not one product from California on those tables. We thought we would ask for wine. We had lots of French and German wine. Let's say we will have a little sauterne. We can't get it. We said we did not like the foreign wine, and unless we get what we want we will not have any. So they went down town and got some California wine. We asked for prunes. We could not get them. Afterwards some of them went over to the exposition and made arrangements to get some of the California prunes, and then we had prunes. We must advertise, as Mr. Swasey says, judiciously, and advertise everywhere, wherever we go. There is one thing stated here, I think, that is wrong. A poor article well advertised will sell. In the patent medicines that you put into your stomach, half the cost is for advertising. Good advertising will make you buy what you don't want.

QUESTION. If you advertise a poor article one season and sell that, next year it will not sell, will it?

ANSWER. That is right. I believe that the best thing for us to do is to put up good prunes, put up a good article, and advertise and make the people know that what we say about our goods is true. That is the idea for us—furnish a good article, and the rest will take care of itself.

MR. SWASEY. I am sure this gentleman misunderstood me. I do not advocate the advertising of anything that has not got merit. I would not advocate advertising something that would not be a success, simply for the temporary profit it would make me. Ninety per cent of the money, I am sure, that is spent for advertising is absolutely wasted simply because they have not the right idea, or they don't go into it with the idea of what is necessary and stay with it. Advertising without coöperation is simply worthless, a waste of money. So far as advertising prunes is concerned, I do not wish to be understood as advocating the advertisement of prunes from a sentimental standpoint. It is only for the purpose of helping the grower to help himself. If you went to work and put an advertisement of prunes on a fence, it might get one or two people to buy prunes, but it would not be profitable to do so.

MR. McDONALD. Some one has said that we could not buy prunes in our hotels and restaurants. I made it my duty, on Tuesday morning, as I do every time I come to San José, to ask for a dish of prunes for breakfast. And I get a dish of prunes with some good Jersey milk, and it is a delicious dish. When I go down to San Francisco, I go to the Bohemian Club, and I call for prunes. I always get a most delicious dish of cooked prunes with the richest milk, and a nicer dish I never tasted in my life. Every morning I ask for prunes at the St. James Hotel, and I get them every time, and they are delicious.

DR. DINSMORE. Mr. Shoup has had some experience in the promotion of prunes. I think we should like to hear his experiences.

MR. SHOUP. Mr. Chairman, Ladies and Gentlemen: I am the chap that had the trouble with the cook books. When we were all talking about advertising some time ago, I thought I would make a little experiment and investigate a little. I wrote a little pamphlet about how to eat California fruit, which has been printed and circulated somewhat. I found that no attempt had been made anywhere to interest consumers in eating California fruit. I went through fifteen cook books, and found twelve that had nothing at all about California cured fruits. And a little investigation showed that only two of those had anything about prunes. In different parts of the country prunes were not served at all, and most people did not know how to prepare them properly. We were making great efforts at this end of the line to control the crops and create a better demand and higher price, but no efforts were made to show people how to prepare fruits in the best way. That gave me a strong idea that something must be done to make people eat California fruit. I remember, also, of looking up some statistics at the time on the subject of the increase per pound of the various articles of food that had taken place in the United States since 1850. It showed that through advertising breakfast foods and such things, there had been an enormous increase, while in prunes and cured fruits there had been scarcely any. I believe that the use of breakfast foods has to some extent interfered with the growth of the demand for our prunes, because when a busy man eats breakfast he is not going to eat something such as H O and prunes too.

I think that if you would even advertise your prunes in the papers and magazines of the United States and say nothing more than to call attention to the nutritious and delicious qualities of California sunshine fruits, in a very short time, without a word about prunes, you would increase the demand for them enormously. Prunes should be put up in packages in such an attractive way that when a woman buys a package and takes it home and puts it upon the shelf in the pantry, she sees that package every day and the advertisement is so fixed in her mind that when she again wants prunes she will ask for that brand. Now, the fact that a brand would be necessary was overlooked, and I believe that is what should be advertised.

A MEMBER. It seems to me that we have overlooked that we, as a whole, are fruit-growers and not advertising men. When a manufacturer, for instance, offers an article for sale he calls in a specialist in advertising. The specialist prepares his plans about advertising. It seems to me that if the fruit-growers would call in a specialist to work out the details of these matters they would get results. The manufacturer certainly does not work out the details of advertising his goods, and the fruit-growers should not, either.

APPOINTMENT OF COMMITTEE ON LEGISLATION.

PRESIDENT COOPER. I will now name the Committee on Legislation, created by motion this morning, for the purpose of asking the Legislature for a further appropriation to increase number of inspectors in the quarantine office of the State to prevent the introduction of insect pests or dangerous animals. There is another committee on the question of an increased appropriation for the purpose of securing beneficial insects for the State. Also, there is a suggestion, made by Professor Fowler, about the pure food law. That may be important concerning food products in the next Legislature. I will name J. O. Hayes of San José, B. V. Worden of Yuba, John Markley of Geyserville, B. E. Hutchison of Fresno, and General Jennison of Covina. The Committee on Transportation was left without being discharged.

MR. SPRAGUE. As the Committee on Transportation has served this association faithfully and most energetically in past years, and as it seems to have arrived at the limit of usefulness, perhaps it would be well to discharge this committee. Therefore, I move that the Committee on Transportation be discharged.

PRESIDENT COOPER. Are you going to do without a Committee on Transportation?

MR. SPRAGUE. I suppose it would be subject to the authority of the Commissioner of Horticulture, who is really the head of this Convention, and who has authority to appoint a Committee on Transportation at his discretion.

DR. DINSMORE. If we adopt this motion, we might amend by requesting the President to appoint a committee.

PRESIDENT COOPER. The Committee on Transportation will be discharged. A motion is made and seconded that the President be authorized and requested to appoint a Committee on Transportation to serve for the coming year.

Motion carried.

PRESIDENT COOPER. I have to thank the Convention and the people of San José and elsewhere for their attendance here, and for the good-will manifested at this Convention. We will take an adjournment *sine die*.

ELLWOOD COOPER,
Chairman.

JOHN ISAAC,
Secretary.

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